

The Creation and Deterioration of Intellectual Capital in a Meta-Organisational Context

José António Fernandes Lopes Oliveira Vale

Tese de Doutoramento em Gestão

Especialização em Contabilidade e Controlo de Gestão

Orientação de:

Professor Doutor Manuel Emílio Mota de Almeida Delgado Castelo Branco

Professor Doutor João Francisco da Silva Alves Ribeiro

Faculdade de Economia da Universidade do Porto

2015

To my daughter Lara, for all her love and her “child’s play”

To my wife Vera, for her love and affection

To my parents, for always believing in me

To my fathers-in law for their support

In memory of Francisco Lopes, “you will always be with me”

Biographic Note

José António Fernandes Lopes Oliveira Vale was born in 24 September 1975 in Porto. He lives in Maia, Portugal, with his wife Vera and his daughter Lara.

Presently he is an invited lecturer at the Porto polytechnic, teaching several management accounting courses at the School of Accounting and Administration of Porto (ISCAP). In the past, he has also been an invited lecturer at the University of Porto (Faculty of Engineering) and at the University of Aveiro (Department of Economics, Management and Industrial Engineering) where he taught several courses related to management. He is also a chartered accountant and partner of an accounting and consulting firm in Porto. Moreover, José is a member of Porto Polytechnic's Centre of Studies in Business and Legal Sciences (CECEJ) and member of the Portuguese Accounting Research Network (Grudis).

Besides holding a degree in Accounting and Administration at ISCAP, Porto Polytechnic, he holds an MBA in Commercial Operations Management and an MSc in Administration and Management, both granted by the Católica University of Portugal.

José has presented communications in seminars and conferences such as ECIC 2011 (3rd European Conference on Intellectual Capital), ECKM 2012 (13th Conference on Knowledge Management) and ECKM 2014 (15th Conference on Knowledge Management).

Acknowledgments

Many individuals have contributed to this journey. Their ideas and namely their support and motivation were crucial to provide me with the rigour and enthusiasm that a PhD demands and to give me strength in the worse moments.

Firstly, I would like to express my deepest gratitude to Professor Manuel Castelo Branco and Professor João Ribeiro for all the support they gave me. I was fortunate to have these two fantastic human beings as supervisors, whose guidance and encouragement were crucial to accomplish this project.

I wish also to thank the support given to me by several of my colleagues from ISCAP and from UA where I have been working for the past years. I would also like to express my gratitude to my friends for their support.

I would also gratefully acknowledge the comments made by the participants in the following conferences: 3rd European Conference on Intellectual Capital (18-19 April 2011, Nicosia, Cyprus); 13th European Conference on Knowledge Management (6-7 September 2012, Cartagena, Spain); 15th European Conference on Knowledge Management (4-5 September 2014, Santarém, Portugal). In addition, I wish to thank the comments made by the editor and the anonymous reviewers of the Journal of Intellectual Capital, which proved extremely useful.

My thanks also goes to the organisation in which I undertook my research – the Seaport of Aveiro as represented by its Port Authority. This organisation allowed me to consult several documents which were critical for this research. I also wish to thank

several of its members and, specially, I am indebted to one member of its board of directors, Doctor Luís Marques. His huge availability to cooperate with this research as well as his contributions were especially valuable.

I wish to thank to my parents for always being by my side, in the better and worse moments, always supporting me during my studies and during this doctoral journey. All my achievements have been rooted in their unconditional love. I also wish to thank to my parents-in-law for their encouragement and their support. Also my thanks to the rest of my family, namely my uncles.

A word to my two princesses: Lara and Vera. This thesis was only possible to be accomplished due to them. All the strength that I needed in order to accomplish this journey came from their comprehension, patient or a simple smile. This thesis is dedicated to you.

A final word to thank a person that is no longer among us, my uncle and godfather Francisco Lopes. He was a person that always believed in me, care for me and was always proud of me. So, wherever you are now, I am certain that you will continue to be proud. You will be always in my heart.

Abstract

This thesis explores the phenomenon of creation and deterioration of Intellectual Capital (IC) within a specific and complex network setting that we labelled ‘meta-organisation’. It is the result of an in-depth single case study which was conducted in a Portuguese seaport – the Seaport of Aveiro. Several issues regarding the creation, deterioration and management of IC are explored along three essays that compose the thesis.

In the first essay we explore the effect that the interdependency between a meta-organisation’s IC and its members’ IC has over its creation and deterioration at both levels of analysis. We argue that there are underexplored settings such as meta-organisations in which two types of IC can coexist – the Collective Intellectual Capital (CIC) of the meta-organisation and the Individual Intellectual Capital (IIC) of each one of its members. This essay contributes to IC literature by providing evidence that CIC and IIC appear as a function of both collective and individual dimensions. Although present at different levels of analysis, these two types of intellectual capital are interconnected in a non-linear way. It supports the claim that the whole is different from the sum of its parts, i.e. the meta-organisation’s IC can be different from the sum of its members’ IC. This essay suggests that, although a meta-organisation is composed by individual organisations, there are CIC dimensions that go beyond the individual ones.

In the second essay we explore the main factors behind the creation and deterioration of a meta-organisation’s Collective Intellectual Capital and how they are articulated in the production of such effects. This essay contributes to the development of IC research by providing evidence that compatibility/incompatibility of goals and power

are crucial drivers for the creation or deterioration of CIC in a meta-organisation. More specifically, we conclude that Collective Intellectual Assets (CIA) or Collective Intellectual Liabilities (CIL) can be a consequence of collaborative and/or conflictive behaviours, which in turn may result from compatibility or incompatibility of goals and power relations between the various organisations. These connections are encapsulated in an integrated framework where dyadic and more complex relationships are depicted.

Finally, in the third essay we explore the management of the meta-organisation's CIC from a power perspective. In this essay we suggest that, besides deploying resources to develop CIC, a network coordinator should focus on fostering higher levels of collaboration, aiming to develop a more 'sustainable' type of CIC. A trust based collective culture should thus be promoted. Thereby, in order to attain that goal, the network coordinator should mobilise different and interrelated dimensions of power, namely the non-coercive ones. This essay provides researchers and practitioners with important insights, namely regarding the dynamics of power and its effects over the Collective Intellectual Capital in a meta-organisational setting.

Resumo

Nesta tese explora-se o fenómeno de criação e deterioração de Capital Intelectual num contexto de rede, específico e complexo, que classificámos de ‘meta-organização’. Resulta de um estudo de caso realizado num porto Português – o Porto de Aveiro, onde diversas questões relativas à criação, deterioração e gestão do Capital Intelectual são exploradas ao longo dos três ensaios que a compõem.

No primeiro ensaio exploramos o efeito que a interdependência entre o Capital Intelectual de uma meta-organização e o Capital Intelectual dos seus membros exerce sobre a criação e deterioração deste em ambos os níveis de análise. Consideramos que existem contextos pouco explorados, tais como meta-organizações, em que dois tipos de Capital Intelectual podem coexistir – o Capital Intelectual Coletivo da meta-organização e o Capital Intelectual Individual de cada um dos seus membros. Este ensaio contribui para a literatura sobre Capital Intelectual ao fornecer evidências de que Capital Intelectual Coletivo e Capital Intelectual Individual surgem como função de ambas as dimensões coletivas e individuais. Embora presentes em diferentes níveis de análise, ambos os tipos de Capital Intelectual estão interligados de uma forma não linear. Suporta-se, assim, a afirmação de que o todo é diferente da soma das partes, ou seja, o Capital Intelectual da meta-organização pode ser diferente da soma dos Capitais Intelectuais dos seus membros. Este ensaio sugere que, apesar de uma meta-organização ser constituída por organizações individuais, existem dimensões do Capital Intelectual Coletivo que vão para além das individuais.

No segundo ensaio exploramos os principais fatores que estão por trás da criação e deterioração do Capital Intelectual Coletivo de uma meta-organização, bem como a sua

articulação na produção de tais efeitos. Este ensaio contribui para o desenvolvimento da investigação em Capital Intelectual, fornecendo evidências de que a compatibilidade/incompatibilidade de objetivos e o poder podem ser geradores fundamentais de criação ou deterioração do Capital Intelectual Coletivo numa meta-organização. Mais especificamente, concluímos que Ativos Intelectuais Coletivos ou Passivos Intelectuais Coletivos podem ser uma consequência de comportamentos colaborativos e/ou conflituosos, que por sua vez podem resultar de uma compatibilidade ou incompatibilidade de objetivos e de relações de poder entre as várias organizações. Essas relações estão condensadas num esquema integrado, onde relações diádicas e mais complexas são retratadas.

Finalmente, no terceiro ensaio exploramos a gestão do Capital Intelectual Coletivo da meta-organização a partir de uma perspectiva de poder. Neste ensaio sugerimos que, além de investir recursos de modo a desenvolver Capital Intelectual Coletivo, um coordenador da rede deverá focar-se em promover elevados níveis de colaboração, com o objetivo de desenvolver um tipo mais ‘sustentável’ de Capital Intelectual Coletivo. Uma cultura coletiva baseada em confiança deverá, assim, ser promovida. Desse modo, a fim de alcançar esse objetivo, o coordenador da rede deverá mobilizar dimensões de poder diferentes e interrelacionadas, nomeadamente as não coercivas. Este ensaio oferece importantes contributos aos investigadores e profissionais, designadamente relativos às dinâmicas de poder e aos seus efeitos sobre o Capital Intelectual Coletivo num contexto de uma meta-organização.

Table of Contents

Biographic Note	i
Acknowledgments	ii
Abstract	iv
Resumo	vi
Table of Contents	viii
Abbreviations	xi
List of tables and figures	xii
Chapter 1 – Introduction	1
1. Introduction	1
2. Background to the research	2
3. Research objectives	11
4. Research method	13
5. Structure of the thesis	18
Chapter 2 – Individual Intellectual Capital versus Collective Intellectual Capital in a Meta-Organisation	19
Abstract	19
1. Introduction	20
2. Background and relevant literature	23
2.1. IC creation and deterioration – IC as an asset or a liability	23
2.2. IC beyond individual organisations	27
2.3. IC at the meta-organisation level – Individual IC vs Collective IC ...	31
3. Methodology	33
4. The case study	38

4.1. The new business unit	39
4.2. The strikes	41
4.3. The Environmental Management System	43
4.4. The IT system	46
5. Results and Discussion	49
6. Conclusions.....	55
Chapter 3 – A Relational Approach to the Creation and Deterioration of Intellectual Capital in a Meta-Organisation.....	58
Abstract	58
1. Introduction.....	59
2. The roles of collaboration and conflict in IC creation and deterioration	62
3. The case study	68
3.1. Methodological note	68
3.2. Research site – The Seaport of Aveiro and Aveiro’s Port Authority	72
3.3. Episode 1: The concession within the Dry Bulk Terminal.....	74
3.4. Episode 2: The IT System	76
3.5. Episode 3: The Union and the labour problems in the Seaport of Aveiro.....	81
3.6. Theory Development	84
4. Summary and Conclusions	93
Chapter 4 – Intellectual Capital Management and Power Mobilisation in a Meta-Organisation.....	98
Abstract	98
1. Introduction.....	99
2. IC management and meta-organisations	100
3. IC and its management in seaports	103

3.1. Collaboration	105
3.2. The role of the coordinator	107
3.3. Power	109
3.4. Summing up.....	114
4. The case study – the Seaport of Aveiro	114
4.1. Methodology.....	115
4.2. The management of IC by APA	117
4.2.1. Collaboration as the source of sustainable IC	117
4.2.2. The four dimensions of power in action.....	119
5. Discussion	128
6. Concluding remarks and future development of the research.....	133
Chapter 5 – Conclusion.....	136
1. Introduction.....	136
2. Summary of the thesis.....	136
3. Contributions.....	139
4. Limitations and opportunities for further research	141
5. Concluding remarks	142
Appendix 1 – Intellectual Liabilities	144
Appendix 2 – Discussions and Interviews	145
Appendix 3 – Semi-Structured Interviews Guides	146
Appendix 4 – Documentary Data and other Records	158
Appendix 5 – Descriptive Codification	165
References.....	171

Abbreviations

AEEPA – Association of Stevedores Companies in the Seaport of Aveiro

APA – Aveiro’s Port Authority

BDM – Business Development Manager

CIA – Collective Intellectual Asset

CIC – Collective Intellectual Capital

CIL – Collective Intellectual Liability

CRC – Collective Relational Capital

CSC – Collective Structural Capital

ETP – Port of Aveiro’s Dockers Pool

EU – European Union

GESPOR – Port of Aveiro’s IT System

HC – Human Capital

IA – Intellectual Asset

IC – Intellectual Capital

IIC – Individual Intellectual Capital

IL – Intellectual Liability

IPTM – Institute for Ports and Maritime Transport

ITsM – IT System Manager

JUP – Port Single Window

MotB – Member of the Board

PA – Port Authority

PCA – Port Community Association

PIPe – Electronic Port Procedures and Information

RC – Relational Capital

RftE – Responsible for the Environmental Area

SC – Structural Capital

List of tables and figures

Table 2.1 – A typology of inter-organisational network research.....	29
Figure 2.1 – Interdependency between IIC and CIC in a meta-organisation.....	33
Figure 2.2 – IC creation and deterioration in a meta-organisation	54
Figure 3.1 – An IC relational framework.....	68
Figure 3.2 – The effects of a dyadic compatibility of goals over CIC.....	86
Figure 3.3 – The effects of a dyadic incompatibility of goals over CIC.....	89
Figure 3.4 – The effects of a network incompatibility of goals over CIC	92
Figure 3.5 – Meta-organisation’s CIC creation/deterioration framework	94
Figure 4.1 – A CIC management framework.....	129

Chapter 1 – Introduction

1. Introduction

With the research presented in this thesis it is our aim to contribute to a more comprehensive understanding of the phenomenon of creation and deterioration of Intellectual Capital (IC) in a specific and complex setting (network) that we call meta-organisation, i.e. an organisation composed by several other interdependent organisations that collaborate towards a common goal. An in-depth single case study was conducted in a Portuguese seaport – Seaport of Aveiro – which possesses the required characteristics to be conceptualised as a meta-organisation and consequently to provide us with several illustrations in order to discuss our research problem.

This thesis is divided into three different essays, with a common theme: the creation and deterioration of IC. In the first essay we explore the articulation between the creation and deterioration of IC at a collective level (the meta-organisation) and at the individual level (its members). In the second essay we determine how the coexistence of different goals and different levels of power jointly drive the creation and deterioration of the Collective IC in this type of setting. Finally, in the third one we discuss how the network coordinator manages the meta-organisation's Collective IC by mobilising different dimensions of power.

2. Background to the research

Many authors consider an organisation's intangible resources as the most important and required critical drivers of its sustainable competitive advantages (Marti, 2004; Palacios and Galván, 2006). In this thesis we refer to these intangible resources as Intellectual Capital (IC), which can be broadly defined as “the immaterial sources of value related to employees' capabilities, the organisation's resources and processes and the relationships with its stakeholders” (Kujansivu, 2008, p. 26).

Garcia-Parra *et al.* (2009) refer to the influential economist John Kenneth Galbraith as having introduced the term “intellectual capital” in 1969. This concept has been especially developed in the 1990s when organisations such as Skandia started to measure and to report it (Marr, 2005). Since 1993, an increase in publications (namely practitioners' ones) on IC, proposing models for measuring and managing it, was noticed (Marr, 2005). Skandia's work was indeed valuable to start a debate and promote initiatives regarding IC measurement (Edvinsson, 1997). The importance of research in IC has increased significantly since then and the Lisbon Agenda, which refers to Europe's effort to promote investment in intangibles, is an evidence of this increasing importance (Lin and Edvinsson, 2011). IC encompasses several disciplines, including accounting. IC accounting is not confined to its measurement. In fact, it can be defined as a “management, accounting and reporting technology towards understanding, measuring and reporting knowledge resources such as employee competencies, customer relationships, brands, financial relationships and information and communication technologies” (Guthrie *et al.*, 2012, p. 70).

Several IC models propose different taxonomies for assessing and measuring it. Ferenhof *et al.* (2015), in their literature review of IC models, identified eleven dimensions of IC, which included the earlier ones proposed by Edvinsson and Malone

(1997) or Stewart (1997). Indeed, IC is commonly decomposed into three dimensions: human capital, structural capital and relational capital (Bontis, 1999; Cañibano *et al.*, 2002; Roslender and Fincham, 2001; Liu, 2007).

Although several frameworks have been developed to identify and measure IC, most of them focus on the intellectual assets of an organisation. An increasingly important topic of investigation in IC research concerns the concept of intellectual liabilities. This concept resulted from the findings that IC can be seen as a source of value destruction, in addition to the traditional and “too optimistic” view that considers it as an intellectual asset contributing to value creation (Stam, 2009; De Santis and Giuliani, 2013). From a managerial perspective, it is important to identify future organisational success as well as failure (Stam, 2009). Without assessing the latter, value deterioration cannot be foreseen (Stam, 2009).

Harvey and Lusch (1999) were the first to address and to theoretically discuss this topic, by developing a model in order to assess the extent of an IL. Since then, ILs have been defined according to two different conceptual streams: as the depreciation of IC’s value (Abeysekera, 2003; Caddy, 2000) and as non-monetary obligations (Garcia-Parra *et al.*, 2009; Harvey and Lusch, 1999). Intellectual liabilities can be further decomposed in internal and external ones (see Appendix 1 for further detail): internal intellectual liabilities “refer to the causes of deterioration that arise from the sources of value creation within the organisation” while external intellectual liabilities “refer to the causes of deterioration that come from outside and are beyond control of the organisation” (Stam, 2009, p. 99). More recently, Giuliani (2015) combined the concept of IC and IL with the concept of time. Nevertheless, ILs continue to be one of the most under researched and, to a certain extent, avoided concepts in IC research (Dumay, 2013).

In this thesis we conceptualise IC from an Intellectual Equity perspective considering that it may be composed of Intellectual Assets (IA) and Intellectual Liabilities (IL) (Harvey and Lusch, 1999). More specifically, and adopting the internal intellectual liability taxonomy suggested by Stam (2009), IC can be considered as being composed by Human Capital (HC), Structural Capital (SC) and Relational Capital (RC), where: $HC = \text{Human Assets} - \text{Human Liabilities}$; $SC = \text{Structural Assets} - \text{Structural Liabilities}$ and $RC = \text{Relational Assets} - \text{Relational Liabilities}$. We use this taxonomy as a basis for our analysis.

Despite its growing importance, IC research is being mainly discussed in academic or management consulting circles, and namely at a micro-organisational level, i.e. regarding individual firms (Bontis, 2004; Pöyhönen and Smedlund, 2004; Lin and Edvinsson, 2011). Many researchers started to inquire the importance of knowledge resources as sources of regional and local development dynamics, advocating the importance of IC trying to go beyond the study of individual firms, arguing that these ‘macro’ and ‘meso’ organisation systems can obtain competitive advantages from IC (Schiuma *et al.*, 2008). Hence, in the last decade, contributions underlying the strategic importance of intangibles for value creation capabilities at a ‘meso’ or ‘macro’ organisational level (e.g. local production systems, clusters, cities, regions and nations) have been growing (e.g. Maditinos *et al.*, 2010; Bontis, 2004; Pöyhönen and Smedlund, 2004; Lin and Edvinsson, 2011; Schiuma *et al.*, 2008; Palacios and Galván, 2006). Economists usually use the concepts of natural, physical and financial capital to assess value creation in these contexts (Schiuma *et al.*, 2008). Lin and Edvinsson (2011, p. 8) claim that if “intangible assets are important to private enterprise organizations, they should also be important in increasing the productivity and competitiveness of the public sector, the nation, and the region”. In a knowledge economy, IC can thus be crucial to ‘meso’ and macro-level units in the same way that it is a critical concept to organisations

or individuals (Bounfour and Edvinsson, 2005). Business models are being translated to nations or regions and there has been an effort to apply the traditional IC methodologies to broader scopes of analysis (Lin and Edvinsson, 2011).

In this type of settings, IC can be assessed at different but interconnected levels (Nielsen and Dane-Nielsen, 2010). According to Nielsen and Dane-Nielsen (2010, p. 9), organisation's characteristics are "made up of a series of properties from a process beginning with the individuals' (subunits') knowledge and skills, moving through group practices and traditions to organizational value creation through a number of mechanisms consisting of communication and organizational infrastructure". They argue that higher levels emerge out of the lower levels and that higher independent supra-individual formations representing the interacting forces are created. Accordingly, research on IC is far more complex when applied to 'meso' or macro-level units. In these cases we refer to a Collective Intellectual Capital (CIC: see chapter 2) that results from interaction at a lower level. In this line of thought, Edvinsson (2013, p. 170) claims that the traditional view of IC with its traditional taxonomy should be "reframed to establish a deeper understanding of a higher form of capital", considering as crucial to understand IC at different levels of analysis.

Edvinsson (2013) also considers that IC research should be approached in a cross-disciplinary way, emphasising the role of networks (or relational capital) and stressing the importance of IC research to go beyond the theory of the firm and follow the new trend of networked organisation. From a 'macro' level perspective, Edvinsson (2013) emphasises the study of IC of settings such as knowledge cities/hubs or knowledge harbours. Indeed, there are still specific settings which, as long as we are aware, are underexplored, such as the case of meta-organisations.

In this thesis we conceptualise a meta-organisation as an organisation *per se*, which “comprise networks of firms or individuals not bound by authority based on employment relationships, but characterised by a system-level goal” (Gulati *et al.*, 2012, p. 573). A meta-organisation has its own goals, although its members may or may not share it (Gulati *et al.*, 2012).

First, this definition suggests that a meta-organisation is composed by networks. Indeed, an organisation can be defined as a social open system or networks of coordinated activities between two or more actors, interacting with the environment, whose boundaries are determined in the first place by their functions and activities, and that behave more organically and less mechanistically (Allee, 2010; Cetin and Cerit, 2010). A ‘system’ is an “organized, unitary whole composed of two or more independent parts, components or subsystems and delineated by identifiable boundaries from its environmental supra-system” (Cetin and Cerit, 2010, p. 196). In order to be effective, these subsystems need to be in harmony and coordinated to work together. Moreover, the outputs of one subsystem can be the inputs of another (Cetin and Cerit, 2010). Rao (1996) claims that an alliance can be thought as a new meta-organisational form, whose main objective is to facilitate knowledge exchange, operating in a meta-organisational culture that transcends the firm’s cultures. Second, the traditional logic of authority, with its inherent characteristics such as control, hierarchy, formality roles or financial incentives, does not fit well with this type of organisation (Gulati *et al.*, 2012). Third, the actual effectiveness of a specific organisation is determined by the degree to which it achieves its goals (Cetin and Cerit, 2010). Indeed, a meta-organisation can be seen as a “whole network”, i.e. a “group of three or more organizations connected in ways that facilitate achievement of a common goal” (Provan *et al.*, 2007, p. 482).

Seaports constitute examples of such settings. Although seaports have been conceptualised in several different ways, such as clusters (de Langen, 2004), we argue that they possess the characteristics to be conceptualised as meta-organisations. Despite not having legal personality, seaports act like single organisations by cooperating with and competing against other seaports, aiming to attract clients (Robinson, 2002). They are complex networks where multiple actors are connected with each other, providing a maritime logistics service in a coordinated way, aiming to create higher value to the final customer/user (Lee and Song, 2010; Bichou and Gray, 2005). Spatial proximity is an important factor to facilitate learning interactions between organisations, including the creation, acquisition and application of knowledge (Hall and Jacobs, 2010). On the other hand, networking improves the flow of information (Sporleder and Peterson, 2003), give organisations the knowledge that they cannot obtain in-house and also give them external economies of cognitive scope (Visser, 2009).

According to supply chain literature, the network goals coexist with each member's own goals (Gagalyuk *et al.*, 2010). Not only the seaport's members possess their goals and follow their individual strategies, but also the seaport (as a whole) may pursue its own goals. Consequently, members' individual strategies have to be accommodated within a logic for collective action (Gulati *et al.*, 2012). A seaport provides a collective service that results from the combination of services of various firms (such as pilots, towage firms or terminal operators) which have to strongly cooperate with each other as a team to improve their operational efficiency and service effectiveness and therefore maximise the logistics performance of the seaport (de Langen, 2004; Lee and Song, 2010). Although stakeholder's interests influence their individual behaviours, collaboration between them is crucial in order to create value for the whole seaport (Notteboom and Winkelmanns, 2002). The attainment of network-level goals (namely in terms of performance) is dependent on the level of collaboration between the network's

members (Gagalyuk *et al.*, 2010). Therefore, from the seaport level of analysis, collaboration between its members as well as between them and the network coordinator (which represents the seaport's interests) is crucial for CIC to be created – for example, by leading to quicker processes (Lee and Song, 2010). From an individual perspective, collaboration can develop an organisation's IC: by collaborating, organisations may acquire or create new knowledge, thus developing its Individual Intellectual Capital (IIC) (Forsman and Solitander, 2003; Joia and Malheiros, 2009; Seleim and Khalil, 2011).

However, relationships between seaport' members can be very complex. At stake is a specific way of organising relationships between legally autonomous agents such as firms (Gulati *et al.*, 2012). Besides being able to have different interests in the seaport, actors might as well have different levels of power (de Langen, 2006). Power is a crucial variable when studying networks and particularly this type of setting (Olivier and Slack, 2006).

Defining power has been troublesome. Classic definitions such as Dahl's (1957) emphasised the decision making behaviours regarding 'key issues' in observable conflict situations. According to Dahl (1957, pp. 202-203) power is exercised when "A has power over B to the extent that he can get B to do something that B would not otherwise do". Furthermore, Dahl (1957, p. 203) argues that "the base of an actor's power consists of all the resources – opportunities, acts, objects, etc. – that he can exploit in order to effect the behavior of another". Threats or promises are examples of such resources. Hardy (1996) labelled this single-face of power as 'power of resources'. However, Bachrach and Baratz (1962, p. 948) questioned this view, arguing that conflict could exist *even* if not directly observable and that power could also be "exercised by confining the scope of decision-making to relative 'safe' issues", i.e. a person or a group could limit decision-making to non-controversial issues, by exerting an influence over others' values or procedures. They

considered that agendas could be set up through ‘non decision making’ processes, i.e. by making use of power to ensure that things would not be done by preventing others from participating fully in decision making. Hardy (1996) termed this second type of power as ‘power of processes’. Lukes (1974) considered the above two dimensions as insufficient to assess power relations, thus adding a third dimension to Bachrach and Baratz’ (1962) proposal: the capability to shape actors’ preferences, perceptions and cognitions of “what are their real interests”, i.e. ‘power over meanings’. The exercise of this type of power could thus make individuals to accept the *status quo* because they would not even think of an alternative. Lukes’s (1974) work suggested that attention should be paid to issues of power least accessible to observation.

These different perspectives allowed to position this thesis, by adopting Hardy’s (1996) four dimensional concept of power, which encompasses the three dimensions of Lukes (1974) – power of resources, power of processes and power of meanings – adding a fourth one: ‘power of the system’, i.e. the power that is embedded in an organisation’ culture and structure and that is taken for granted. Hardy (1996) claims that in order to produce organisational change, these three dimensions could be used against the ‘power of the system’. Hardy (1996) stresses the importance of introducing modifications to the structure, systems, human resource policies and culture to align the organisation with its desired strategy, i.e. by introducing change to IC related aspects, the process of strategy making can be more successful. There are, of course, alternative models of power. Among these, the so-called ‘circuits of power’ framework (Clegg, 1989) has been widely employed in research. The author emphasises the ways networks of power relations are configured and stabilised, fixing circuits through which power strategies must be conducted. The framework thus attempts to bridge structure and agency, arguably with some focus on the way structures of relations, or networks, of power emerge, in time, as a result of (human and non-human) agency. The emphasis in this thesis is more situated:

here, we are looking at the way a specific agent moves within different dimensions – or circuits – of power in its management activities, and specifically in order to influence the creation of intellectual capital in a meta-organisation. We are not looking at the way the overall network of power relations is constructed. In fact, this would imply a scope of analysis that the present thesis does not aim to achieve.

“Interests” and “Power” may trigger different behaviours towards an organisation’s strategy, i.e. its members may act by supporting or obstructing it (Ackermann and Eden, 2011), thus affecting both individual and collective IC. The seaport has collective goals, but members have their own individual ones, and they may prioritise these in detriment of the common ones (Notteboom and Winkelmanns, 2002; Winkler, 2006). This is likely to lead to non-collaborative or even conflictive behaviours towards other organisations, including the network coordinator (Gagalyuk *et al.*, 2010), which in this case is the port authority. As far as the authors are aware, literature on IC only addresses the positive side of relationships, i.e. the intangible assets – namely knowledge development – resulting from collaboration, and not the intellectual liabilities that may emerge from conflict.

For the meta-organisation to achieve its goals, leader organisations such as the port authority should set up collective goals and try to influence the members’ individual behaviours, aligning them with such goals, by promoting collaboration for instance (Provan *et al.*, 2007; de Langen, 2004; de Langen, 2006; Gagalyuk *et al.*, 2010). In order to ensure that no one can appropriate the benefits of the collective service to themselves, coordinating mechanisms are necessary (de Langen and Visser, 2005). Although some authors make a distinction between cooperation, coordination and collaboration, namely based on the level of interaction between actors (Polenske, 2004; Ketchen *et al.*, 2008; McNamara, 2012), in our study we use the term collaboration to refer to the “interaction

between participants who work together to pursue complex goals based on shared interests and a collective responsibility for interconnected tasks which cannot be accomplished individually” (McNamara, 2012, p. 391). We consider this concept more suitable to the specificities of the setting we analyse in this research. Consequently, by collaborating, actors may easily share knowledge between them (Lee and Song, 2010).

Therefore, considering that seaport’s members may act in order to benefit themselves even if damaging the performance of the collective (Cabrita and Bontis, 2008; Ketchen and Hult, 2007), managing the seaport implies motivating members to collaborate (and share knowledge). It also implies overcoming possible collective problems that might emerge (Sporleder and Peterson, 2003). Coordination is thus a crucial variable in this type of context, in order to account for the best interests of the whole system (Gulati *et al.*, 2005; Gulati *et al.*, 2012). However, in a seaport the network coordinator might not have the legal power to impose rules to other members, which means that both forms of coercive and non-coercive power might be used in order to successfully manage the network (Belaya and Hanf, 2009a). Besides investing in CIC creation (e.g. by providing training or developing IT systems), port authorities should focus on an efficient management of relationships. On the one hand, by exerting power to solve collaboration problems. On the other hand, and crucially, by fostering a “culture of collaboration” in order to develop a more ‘sustainable’ type of CIC.

3. Research objectives

As referred above, we intend to contribute to a better understanding of the phenomenon of creation and deterioration of IC within a specific and complex networking environment that we call meta-organisation. A meta-organisation can be considered as an

organisation composed by several other organisations, each one acting with the aim of increasing its own IIC. On the other hand, the meta-organisation has its collective goals and thus it has to manage CIC in order for the whole to be competitive.

Given this overall purpose of the research and the specificity of the setting presented above, its main research questions are the following:

- How are the meta-organisation' and its members' IC interconnected and how does this interdependency affect the creation and deterioration of IC at both levels – individual and collective?
- What are the main factors driving the creation and deterioration of the meta-organisation's CIC and how are they knitted together in the production of such effects?
- How does a network coordinator manage the CIC (Collective Intellectual Capital) of a meta-organisation by mobilising different dimensions of power?

An in-depth single case study was conducted within a Portuguese seaport – The Seaport of Aveiro – in order to enhance understanding about the phenomenon of creation and deterioration of intellectual capital in such setting. The Seaport of Aveiro can offer us an interesting context to study the complexity of managing the CIC of a meta-organisation. Indeed, it is a seaport that has undergone several important changes in the last decade, namely the development and implementation of a Strategic Plan for the whole Seaport and the promotion of a collective culture among its members, for which the creation of a Port Community Association (PCA) has contributed. On the other hand, it has undergone several problems, e.g. the overall economic deterioration and downfall that took place in its context, or the occurrence of various strikes. Furthermore, the fact that

we had a relatively easy access to the Seaport of Aveiro was another element influencing our choice.

4. Research method

Our research followed a qualitative research design focused on the analysis of the creation and deterioration of IC in a meta-organisational setting. Given this aim, and grounding on the research strategies cited by Yin (2009), we adopted an in-depth single case study as the research method. The case study is an appropriate method when we are investigating a “contemporary phenomenon in-depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident” (Yin, 2009, p. 18). We also consider that this method is suitable to be used when we are “examining and understanding unique, rare, and atypical companies and organizations as well as complex and dynamic events and processes” (Mills *et al.*, 2010, p. 95).

We view the seaport as an atypical and complex organisation (meta-organisation) which is composed by several other organisations connected in a relatively complex way. In fact, we are exploring a complex reality and there is no deep comprehension about the phenomenon that we want to study in a holistic way. Furthermore, there is a paucity of management sciences’ research on maritime transportation and seaports (Carbone and De Martino, 2003). We considered that an in-depth understanding of the context and, namely, an analysis of the relationships between seaport’s members was of the utmost importance to comprehend that phenomenon. Hence, we chose the single case study method because it would allow more attention to be given to the Seaport’s specific characteristics. Single case study methodology is a widely accepted one. Indeed, Miles *et al.* (2013, p. 31) acknowledge that “much of qualitative research examines a single case”. The usefulness

of the single case study is advantageous because it can allow more attention to be given to distinctive and typical characteristics of a particular context (Dyer and Wilkins, 1991). Although multiple-case studies offer the possibility of generating theoretical constructs by observing contrasting instances, an in-depth study of a single case allows a deeper understanding of the setting under research (Dyer and Wilkins, 1991).

By aiming to get an overall view of potential determinants regarding IC creation and deterioration, our case study focuses on the seaport, not on the individual organisations that compose it. It is our aim to promote a deep understanding of the case in its unique environment (Mills *et al.*, 2010). The dynamic capabilities approaches (which treat IC as an ongoing, emergent process, focusing on the organisations' capacity to leverage, develop and change intangible assets) and the relational approaches (which focus on the characteristics of the social relationships between several actors) try to analyse how the network is operating as a relational system and how this influences the network capability to create intellectual capital (Pöyhönen and Smedlund, 2004).

Accordingly, we analysed several relationships between some Seaport's members and also between them and the Port Authority, which is a public organisation acting as the port coordinator. Indeed, in this thesis we emphasise its role as manager of the "collective interests" and its behaviours in order to attain the seaport's goals. We adopted a longitudinal perspective in order to explain how several episodes evolved over time.

According to Yin (2009), the most commonly used data sources in case studies are documents, archival records, interviews, direct observation, participant-observation, and physical artefacts. In order to respond to our research questions, we conducted several interviews, analysed documents and other type of records and made, although sparsely and briefly, direct observations in order to comprehend how a seaport operates. Data triangulation was made possible since these different sources addressed the same facts

(Yin, 2009). In case studies, documents are important to corroborate and increase evidence from other sources (Yin, 2009). In our research, documentary data collected from both internal and external sources played a major role, by providing us with crucial information regarding the events that served us as illustrations. This type of data was mostly of public domain.

In March 2010, we informally addressed one member of the Port Authority's Board of Directors (MotB) in order to know the availability of the Seaport to serve as an empirical subject to our research. In April 2010 we had a formal meeting with this member of the board, in which the main objectives of our research were exposed as well as its importance for the Seaport. This discussion also provided us with general information regarding the Seaport and the Port Authority. Since then, several discussions were held and interviews were conducted (see Appendix 2). However, only in May 2011 we made a formal request to the Port Administration, as suggested by the MotB. This request was accepted.

In a first stage (2010 – January 2012) we collected data about the empirical context, namely in order to determine the type of firms that compose the Seaport and how they relate with each other in a network perspective. According to de Langen (2004), it is difficult to delimitate the relevant cluster region because organisations that belong to the 'cluster population' will have strong links with organisations outside the 'relevant cluster region'. During this stage we held four exploratory discussions and conducted two semi-structured interviews with a MotB. These interviews provided us with information about the Seaport and its internal processes, and about the Port Authority's perception regarding several relationships between the Seaport's members. Crucially, these discussions/interviews also allowed us to identify several episodes which we considered suitable to illustrate the processes of creation and deterioration of IC in this type of

context. Aveiro's Port Authority's (APA) internal documents and other records were most valuable to provide us with a "picture" of the network of activities developed within the Seaport. Also important in this stage was a workshop we attended regarding the role of ports, one that was focused on the Seaport of Aveiro.

In a second stage (2012-2013), interviews were more focused on deepening our understanding about the selected episodes. In this stage we conducted four semi-structured interviews with the MotB, one semi-structured interview with one Business Development Manager (BDM), two semi-structured interviews with an APA's IT System Manager (ITsM) and also held an unstructured interview with a Responsible for the Environmental Area (RftE). The interviews conducted with the aforementioned Member of the Board were crucial due to his knowledge and personal intervention regarding the illustrated episodes. In 2014 we conducted two additional semi-structured interviews: one with the MotB and the other with the ITsM. We intended to render some particular issues regarding the case study more precise. Documentary data and other records were especially important during this stage.

The selection of the interviewees was based on their potential contribution for this thesis, namely regarding their knowledge about the seaport's processes and about specific events. Interview Guides were designed prior the semi-structured interviews (see Appendix 3). Notes were taken in all discussions and interviews. The semi-structured interviews were recorded, with the most important parts being transcribed, in order to better analyse its contents.

Documentary data and other records (from both internal and external sources) played a major role on this research (see Appendix 4 for further detail). Some documents were collected within the APA's headquarters between June and August 2012 (including emails, faxes, contracts, internal memos and other reports). Those documents were

publically available when requested due to the fact that APA is a public and state owned organisation. The Strategic Plan and the Environmental Management System reports had a significant importance for our analysis. Other documents and records, such as newspapers or radio interviews, were collected from external sources, also playing a crucial role. For example, one of the presented illustrations had a high media coverage which allowed us to better comprehend it.

Regarding data analysis, we followed the five stages suggested by Yin (2011): compiling, disassembling and reassembling data, and then interpreting and concluding. The *compiled* data retrieved from different data sources – interviews, documents and other records – was *disassembled* and examined for relationships. This data referred to several episodes occurred in the Seaport, which we considered suitable to illustrate our case study. After being coded, it was *reorganised* according to substantive themes (Miles *et al.*, 2013; Yin, 2011). We used descriptive codes to summarize some basic topics from passages collected from the interviews (see Appendix 5 for further detail). The data collected through documents and other records has also supported the codification process (see Appendix 4).

The analysis of APA's internal documents was facilitated by the fact that this organisation has its documents physically archived in folders which are organised by subject (e.g. Environmental Management System) or by the name of the Seaport's member (e.g. an operator). Also, these documents were sorted in a chronological way. Finally, the reassembled data was *interpreted* and *conclusions* were drawn. Further details regarding the adopted qualitative methodology are included in each essay.

5. Structure of the thesis

This thesis is structured in three essays which follow a sequence. Accordingly, it is organised as follows: Chapter 2 includes the essay “Individual Intellectual Capital versus Collective Intellectual Capital in a Meta-Organisation”¹. Chapter 3 includes a second essay titled “A Relational Approach to the Creation and Deterioration of Intellectual Capital in a Meta-Organisation” and finally Chapter 4 includes the essay “Intellectual Capital Management and Power Mobilisation in a Meta-Organisation”.

Since the essays are related with each other some information can be repeated, namely regarding the research method. The final chapter of this thesis ends with a conclusion which offers a summary of the essays and discusses its main contributions. Then, some limitations are described and indications for further investigation are suggested. This chapter ends with some concluding remarks.

¹ A shortened version of chapter 2 has been accepted for publication in the ‘Journal of Intellectual Capital’, and is scheduled for publication in 2016.

Chapter 2 – Individual Intellectual Capital versus Collective Intellectual Capital in a Meta-Organisation

Abstract

Although there have been some efforts to apply the traditional Intellectual Capital (IC) methodologies to a bigger scope, such as regions or nations, some ‘meso’ level empirical contexts are still unexplored. This is the case of meta-organisations. In this essay we discuss and analyse how intellectual capital (IC) is created and deteriorated in a meta-organisation by assessing the interdependency between the collective IC of the meta-organisation and the individual IC of its members. We discuss how the creation and deterioration of IC at one level (individual or collective) may have positive or negative impacts at the other level.

To support this discussion, based on a case study conducted in a specific meta-organisation – a seaport, we provide several illustrations depicting different types of relationships between both types of IC. Evidence suggests that IC appears as a function of both individual and collective IC dimensions. Changes in the meta-organisation’s IC or in its members’ IC may have different impacts on each other. This means that members’ actions not only may generate Intellectual Assets (IA) or Intellectual Liabilities (IL) for themselves, but also, due to the fact that they belong to a specific network where interdependency is high, may lead to collective intellectual assets or even liabilities. Also, an increase or decrease of the seaport’s own CIC can also have different types of impacts at the individual level. Evidence also suggests that those changes in IC should be analysed in a longitudinal way, since both levels affect each other in different ways over time.

Despite the validity of our interpretations in the context of the case study, generalisation to other situations should only be conducted in a theoretically framed manner. This study provides important insights for academics, as well as important strategic and managerial implications for seaports and their stakeholders, who are concerned with their performance.

1. Introduction

The assertion that organisations are more dependent on intangible resources than on tangible ones for the creation of sustainable competitive advantages has become commonplace (Marti, 2004; Palacios and Galván, 2006). The term IC – Intellectual Capital – is used to refer to non-physical sources of future economic benefits (Cañibano *et al.*, 2002). Research on IC has focused mainly on individual business firms, treating knowledge in a static way (in terms of a knowledge stock), namely by identifying and evaluating the intangible assets owned by an organisation in a particular moment, and not in a dynamic way (in terms of knowledge flows) (Pöyhönen and Smedlund, 2004; Schiuma *et al.*, 2008). These two approaches to IC (static and dynamic) are also discussed by Kianto (2007).

In other types of settings, such as regions, nations, clusters and local production systems, economists have focused on natural, physical and financial capital in order to explain why some are able to create more value than others (Schiuma *et al.*, 2008). However, in the last decade, the importance of knowledge as a source of regional and local development has been acknowledged and many argue that ‘macro’ organisations can obtain competitive advantages from knowledge resources (Schiuma *et al.*, 2008; Maditinos *et al.*, 2010).

Despite all the progress, there is still a great deal to know about IC in these broader, more ‘macro’ and ‘meso’, types of organisations. In particular, seldom have researchers used a network-level approach to explain how individual organisations and their actions might affect outcomes in the networks in which they are involved (Provan *et al.*, 2007). In this thesis, we analyse IC at a ‘meso’ level, namely by focusing on the networking arrangements between organisations (Smedlund, 2006). By examining a whole network we can gain insights about how it evolves, how it is governed and how

collective outcomes (such as IC) might be generated (Provan *et al.*, 2007). Although theories concerned with organisational design emphasise several elements such as formal authority, control, incentives' design and formal roles, such elements may not be present in settings (e.g. clusters; networks) that perform as a single unit (Gulati *et al.*, 2012). We will call them meta-organisations. The meta-organisation's IC (hereafter mentioned as collective IC, or CIC) should be managed in order for sustainable competitive advantages to be acquired.

This is a study which aims to improve understanding about how IC is created and deteriorated in a meta-organisation. It resorts to Provan *et al.*'s (2007) typology of inter-organisational network research to assess the impact of individual organisations on the whole network's IC and vice-versa. The main research questions addressed are:

- How does the creation and deterioration of IC at the individual level affect the CIC in a meta-organisation?
- How does the creation and deterioration of IC at the collective level affect members' IIC in a meta-organisation?

As far as the authors are aware, the processes of IC creation and deterioration, and namely the relationship established between the IC of the meta-organisation (collective IC, or CIC) and the IC of its members (individual IC, or IIC), have not been fully explored in the literature. This is an important gap, since such a relationship is, so we hypothesise, not necessarily a straightforward one. In this essay, we discuss the possibility that the increase in the IIC of a member of the meta-organisation may not mean a proportional increase of the CIC. Individual actions aimed at increasing IIC can even deteriorate the CIC, i.e. lead to an intellectual liability (IL) for the entire meta-organisation. Finally, we conjecture that collective actions that increase or decrease the CIC may also have positive

or negative impacts at the IIC level. These hypotheses have not been considered in extant literature.

This essay results from a case study conducted in a Portuguese seaport. The review of literature on IC in ‘macro’ and ‘meso’ units allowed us to identify some yet unexplored empirical contexts, such as seaports, which can be seen as complex organisations that possess certain specific characteristics that differentiate them from other collective organisations. These characteristics allow them to be conceptualised as meta-organisations, hence turning them into valuable settings for the study of IC creation and deterioration, and more specifically, for the provision of evidence about the relationships between individual and collective IC. Although seaports should use its available tangible and intangible resources in the best way possible, it is critical that they concentrate their investments on the hard-to-imitate intangible aspects, i.e. the IC (Marlow and Casaca, 2003).

Seaports are complex network systems composed of interrelated organisations with common objectives, collaborating with each other in order to create value for themselves, for the network, and for the final consumer. Synchronic forces are played out among a pluralistic port community that strives for common internal and external goals (Olivier and Slack, 2006). The traditional design logic of control, hierarchy, formality roles and financial incentives does not “fit” with this type of setting which function as an organisation *per se* (Gulati *et al.*, 2012). The case study allowed us to better comprehend IC at a specific ‘meso’ setting, namely by depicting the interdependencies between a meta-organisation’s and its members’ IC, offering some illustrations of different instances of articulation between individual creation/deterioration of IC and collective creation/deterioration. It also suggests that to assess CIC in this settings, due to this multi-

level interrelationship one has to go beyond the mere translation of micro-level models to higher levels.

In the next section we review the concepts of Intellectual Assets (IA) and Intellectual Liabilities as sources of value creation and deterioration, respectively. Also, we go beyond the study of IC at the firm level, and underline the importance of IC in ‘meso’ and macro-level units, namely in a particular type of complex network that we label meta-organisation. We differentiate IIC and CIC within a meta-organisational context with its own intrinsic characteristics. Then, a conceptual framework that is theoretically grounded on the literature reviewed is proposed. In section 3 we describe the methodology adopted in our study. In section 4 we present the case study that provides us with the empirical material to validate the conceptual framework proposed. In section 5 we discuss the case study’s findings and, finally, in section 6 we offer some concluding remarks and present the study’s implications for both practitioners and researchers, as well as some cues for future research.

2. Background and relevant literature

2.1. IC creation and deterioration – IC as an asset or a liability

IC is most often considered as the sum of an organisation’s intellectual assets, and as such the expressions “intellectual capital” and “intellectual assets” have been used interchangeably (Caddy, 2000). A common approach to the conceptualisation of IC is by decomposing it into three dimensions: human capital, structural capital and relational capital (Cañibano *et al.*, 2002; Roslender and Fincham, 2001; Liu, 2007). Human capital refers to employees’ individual knowledge, attributes, attitudes and abilities like

creativity, know-how, experiences, or loyalty (Cañibano *et al.*, 2002; Habersam and Piber, 2003; Jacobsen *et al.*, 2005). Structural capital includes systems and networks, cultures and values, and elements of intellectual property (Cañibano *et al.*, 2002; Roslender and Fincham, 2001; Jacobsen *et al.*, 2005). Intellectual property includes patents, trademarks, licenses, etc. (Jacobsen *et al.*, 2005). Jacobsen *et al.* (2005) also claim that structural capital encompasses all internal processes, models, IT systems and documentation. Relational capital refers to the external relationships with the organisation's stakeholders and to their perception about it (Cañibano *et al.*, 2002; Habersam and Piber, 2003; Jacobsen *et al.*, 2005). It includes dimensions such as image, customer satisfaction or the achievement of financial support (Cañibano *et al.*, 2002; Habersam and Piber, 2003), being related to the concept of "learning organisation" (Nazari and Herremans, 2007). Jacobsen *et al.* (2005) stress the importance of the brand as a component of the relational capital, focusing on aspects such as attitude, preference or reputation.

The traditional view of IC is related to the creation of competitive advantages and value for the organisations. In many cases, investments in human capital may generate structural capital, which in turn may lead to an increase in relational capital. However, investments in IC can also destroy value. Research on issues regarding organisational decline is still limited and IC research follows this same trend. IC literature mainly focus in the "mainstream" IAs, underestimating the importance of ILs (Stam, 2009).

Harvey and Lusch (1999) were the first to address and theoretically discuss this topic, considering as myopic the traditional assumption that all intellectual capital leads to an increase in equity. Caddy (2000) developed further such discussion, arguing that IC should be assessed in net terms by subtracting ILs to IAs, considering the factors that erode the value of intangible assets as intangible liabilities. Since 1999, ILs have been

defined according to two different perspectives: a strategic and an accounting one (Garcia-Parra *et al.*, 2009). The strategic perspective is based on the depreciation of IC's value (Abeysekera, 2003; Caddy, 2000). This perspective is focused on the intangible causes of value loss such as the use of IAs on a bad idea, employees' lack of commitment, employees' lack of capabilities, or loss of key employees (Garcia-Parra *et al.*, 2009). Hence, ILs can be defined as the "potential non-physical causes of organisational deterioration" (Stam, 2009, p. 95). Furthermore, internal and external intellectual liabilities can be distinguished (Stam, 2009). Stam (2009) adapted the traditional IC taxonomy to his internal IL concept: human liabilities, such as employee turnover or insufficient training, involve reductions in the value that employees bring to the organisation, their knowledge, experience or motivation; structural liabilities are related to decreases in the value of procedures, processes and culture of the organisation (weak strategic planning processes or a knowledge unfriendly culture are examples of such liabilities); relational liabilities are related to declines in the value of relationships with customers, suppliers and other stakeholders (e.g. negative word of mouth; poor corporate reputation).

The accounting perspective is considered to be closer to the classical definition of liabilities, viewing ILs as non-monetary obligations (Garcia-Parra *et al.*, 2009; Harvey and Lusch, 1999). This approach is based on Harvey and Lusch's (1999, p. 87) classification of intangible liability as representing "the responsibility of the firm to transfer economic resources or provide services to other entities in the future".

This essay adopts the definition of IL suggested by Garcia-Parra *et al.* (2009, p. 827), which integrates both perspectives: "all non-monetary obligations related to the stakeholders that the company must fulfil, in order to avoid the depreciation of its intangible assets". For example, the non-fulfilment of working conditions may lead to

changes in employees' attitudes, something which can have negative consequences regarding organisational processes or activities (depreciating its structural capital). These negative effects may also affect the organisation's relationship with their stakeholders thus depreciating its relational capital (Garcia-Parra *et al.*, 2009). This topic may also be approached from a different level of analysis. For example, from an inter-organisational point of view, other organisations might form expectations related to non-monetary obligations, which if not accomplished might affect the relational capital (Garcia-Parra *et al.*, 2009). From a single firm perspective, organisations should try to fulfil non-monetary obligations to avoid the depreciation of its IAs (e.g. trying to meet with employees' expectations regarding promotion opportunities or working conditions) (Garcia-Parra *et al.*, 2009). In order to minimise the negative impacts of ILs, organisations should react in quick and efficient ways by using IAs to decrease the IL's size and life span (Caddy, 2000). This is a crucial task since the process of value deterioration leads to negative consequences in a much faster way than when compared with the processes of value creation (Giuliani, 2015).

Giuliani (2015) argues that the time is crucial to assess the negative consequences that, from a dynamic perspective, may emerge from IC, something which has been neglected in IC research. As he puts it: "viewing IC as a process means taking into consideration its life cycle, its changes over time and thus, the time variable" (Giuliani, 2015, p. 5). IC creation/deterioration is a dynamic process that evolves over time, and time, seen as in longitudinal studies, is essential to better comprehend this process. For instance, there is a lag between the investment in IC and its development (Giuliani, 2015). Although these themes are generally addressed from a firm's perspective, they may also be approached from a higher level of analysis.

2.2. IC beyond individual organisations

In the last decade, many researchers have pointed out the importance of knowledge resources as a source of regional and local development, advocating the importance of studying IC beyond individual firms (Schiuma *et al.*, 2008). As Lin and Edvinsson (2011, p. 8) put it, “as intangible assets are important to private enterprise organizations, they should also be important in increasing the productivity and competitiveness of the public sector, the nation, and the region”.

IC research at ‘macro’ and ‘meso’ levels has been gaining some importance in the past decade. Nevertheless, a lack of academic discussion about IC at these levels still subsists (Krušinskas and Bruneckienė, 2015). Most IC research at higher levels of analysis has been focused on Nations, namely as a means to support decision making with the aim of increasing wealth (Seleim and Bontis, 2013; Labra and Sánchez, 2003). The first countries to assess their Nation Intellectual Capitals (NIC) were Sweden and Israel (Bontis, 2004). Since then, several authors have been studying IC in Nations (Lin and Edvinsson, 2011). An important contribute was given by Bontis (2004), who developed a NIC index by assessing IC in Arab countries.

Intangible factors can create competitive advantages for ‘meso’ level settings that compete with each other (Krušinskas and Bruneckienė, 2015). Several proposals have been made, such as those of Marti (2004), who applied his IC Benchmarking system model to a city or Palacios *et al.* (2006), who studied the implementation of an intellectual capital model in a network of cities. More recently, Krušinskas and Bruneckienė (2015) presented a city’s IC balance index grounded on the analysis of the biggest three Lithuanian’s cities. Research on ‘regional IC’ has also improved. For instance, Schiuma and Lerro (2008) considered value creation at a region level as a consequence of its knowledge-based capital, i.e. its regional intangible resources. Other settings such as

industrial districts or clusters have also been addressed in extant literature (e.g. Pöyhönen and Smedlund, 2004).

Business models are, thus, being translated to wider settings and there has been an effort to apply the traditional IC methodologies to these settings (Lin and Edvinsson, 2011), although the complexity of macro-level units turns the direct transposition of those methodologies into a virtual impossibility. Most academic National IC models were inspired in IC research at the firm level and, consequently, they usually make use of the traditional dimensions such as HC, SC or RC (Labra and Sánchez, 2003; Krušinskas and Bruneckienė, 2015).

Because competitiveness of regions can be increased through the development of strong regional clusters and networking (Smedlund and Toivonen, 2007), research in IC should be developed at both these levels, especially when referring inter-organisational networks. Indeed, research regarding IC in networks has been scarce. The work of Palacios and Galván (2006) can be seen as an exception. Nevertheless, this is a field of investigation that should be further explored.

A network can be conceptualised as a group of three or more legally autonomous organisations that are connected and work together to achieve a collective common goal (Provan *et al.*, 2007; Provan and Kenis, 2008). Thus, it can be seen as a community (Polenske, 2004). Different authors may have different meanings for the term “network” and may even use other terms to refer to networks, such as partnerships, strategic alliances, inter-organisational relationships, coalitions, cooperative arrangements or collaborative agreements (Provan *et al.*, 2007). More particularly, an inter-organisational network can be conceptualised as a form of social organisation that has no legal personality and that is more than the sum of the actors (individuals and organisations) and their relationships (Provan and Kenis, 2008). It also encompasses the resources flowing

in those relationships, and the coordinating and steering mechanisms of the network (Pöyhönen and Smedlund, 2004).

Provan *et al.* (2007) suggest that there are two interconnected views that can serve as a basis for theorising on networks: the individual organisation view (micro level) and the network level view (macro-level), with a focus on either organisational outcomes or collective outcomes. Hence, they proposed the following typology of inter-organisational network research:

Table 2.1 – A typology of inter-organisational network research

Independent Variable or Input Focus	Dependent Variable or Outcome Focus	
	Individual Organizations	Collectivities of Organizations
Organizational variables	Impact of organizations on other organizations through dyadic interactions	Impact of individual organizations on a network
Relational or network variables	Impact of a network on individual organizations	Whole networks or network-level interactions

Source: Provan *et al.* (2007, p. 483)

Networks can also be seen as referring to dynamic cooperation through knowledge exchange (Visser, 2009). According to Pöyhönen and Smedlund (2004, p. 356) “it has been argued that most of new knowledge creation happens in networks, not within organizations”. Indeed, networking improves the flow of information (Sporleder and Peterson, 2003), providing organisations with the knowledge that they cannot obtain in-house and also granting them external economies of cognitive scope (Visser, 2009). Therefore, a network can be defined simply as the place of emergence of information,

power and knowledge (Pechlaner and Bachinger, 2010). On the other hand, knowledge transfer may be limited by some barriers such as causal ambiguity, inability to absorb it or other motivational factors (e.g. resistance to change, struggles for power or trust) (Nieves and Osorio, 2013).

Although since the 1980s there has been a growth in collaborative relationships, theories of organisational design continued to focus on individual firms, giving emphasis to its traditional elements such as formal authority (Gulati *et al.*, 2012). Nonetheless, there are complex organisations that should be treated differently, i.e. as meta-organisations. Meta-organisations “comprise networks of firms or individuals not bound by authority based on employment relationships, but characterised by a system-level goal” (Gulati *et al.*, 2012, p. 573). Although this type of organisation has its own collective goals, its members might not share it. In fact, each member may have its individual motivations and incentives (Gulati *et al.*, 2012). Institutions and organisations can serve the network either through the roles they elect to play in it or by providing the infrastructure or the resources to support others in performing roles within the network (Allee, 2010). These characteristics are crucial to distinguish a meta-organisation from other settings. For example, Gulati *et al.* (2012) claim that multinationals or business groups should not be contemplated by the above definition of meta-organisation since formal authority is applied by central actors in these settings (e.g. by controlling stakes).

We believe that there is a fundamental gap in IC literature concerning meta-organisations. Indeed, we can distinguish two types of IC that can coexist at different levels of analysis in such organisations: the meta-organisation own CIC and each of its members' IIC. These levels may affect each other mutually, an aspect that remains virtually unexplored.

2.3. IC at the meta-organisation level – Individual IC vs Collective IC

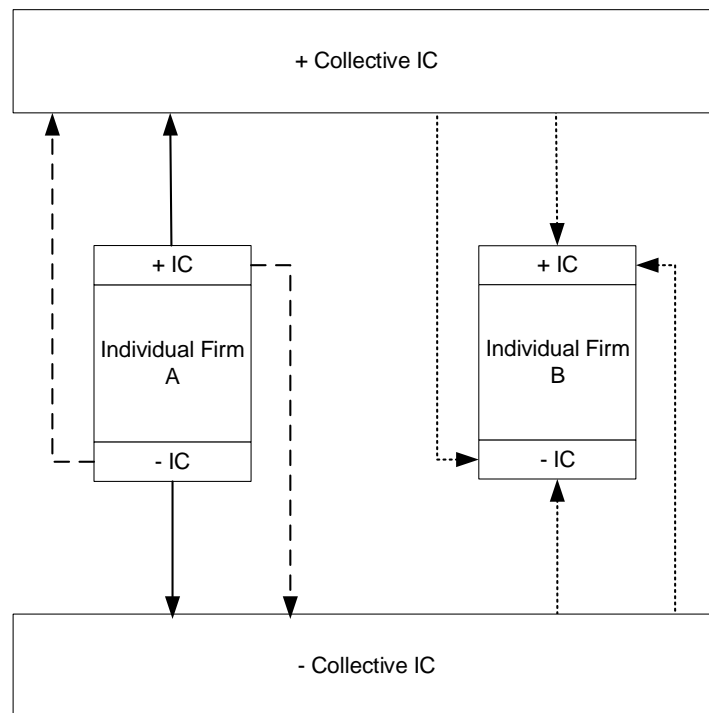
Collective knowledge can be conceptualised as the knowledge integrated in the forms of social and organisational practice, residing in the tacit experiences and enactment of the collective (Nahapiet and Ghoshal, 1998). Most literature on IC still focus on individual firms, considering the importance of collaboration to develop collective knowledge by putting in action employees' capabilities of quickly sharing their insights (Muntean, 2009). Collective knowledge may be considered as the result of the knowledge shared by interconnected individuals (Hine *et al.*, 2007). In this sense, it usually refers to the knowledge that results from the Human Capital composing an organisation. Furthermore, Hine *et al.* (2007) argue that knowledge exchange with other individuals and organisations may also develop IC. Although Peng *et al.* (2007) use the concept of 'Collective Intellectual Capital' to address both intra-organisational and inter-organisational knowledge at a 'micro' level of analysis, it can also be adapted to higher levels. For instance, Lee and Song (2010) suggest that knowledge, which can be defined as useful information or know-how needed to develop value for the whole system, can be acquired both within and between organisations. They argue that learning (as the process of knowledge acquisition and application) can help individual organisations to maximise the 'system value' (e.g. a maritime logistic system) by improving their operational efficiency and service effectiveness. Therefore, by investing in their own IC, individual actors may positively contribute to the development of the CIC of a meta-organisation. Inversely, Solitander (2011) suggests that an intellectual asset of an individual organisation may turn into a liability at a societal level.

Furthermore, Nielsen and Dane-Nielsen (2010) argue that IC can be assessed at different levels of analysis and at the same time, namely at the individual, organisational and market levels. Intellectual capital at an organisational level "must to some extent

emerge from a process where individual level knowledge, acting as a component with structural mechanisms in the form of communication, and the environment, which is constituted by the structural properties of the organization, interact to create a higher level phenomenon” (Nielsen and Dane-Nielsen, 2010, p. 7). They argue that, according to the emergentist perspective, higher levels emerge out of lower levels (e.g. collective level emerges from individual level or organisational intellectual capital emerge from individual knowledge) and that higher independent supra-individual formations representing the interacting forces are created (Nielsen and Dane-Nielsen, 2010). On the other hand, this immediate higher level can be considered as the environment for the actual level and inversely, higher level phenomena have downwardly causal effects on lower level processes. Collaboration can be regarded as the mechanism that develops a higher level organisational IC (Nielsen and Dane-Nielsen, 2010).

This essay suggests that such effects occur in a meta-organisation, where two types of IC (the individual and the collective) can coexist and can be assessed according the level of analysis that is being used. Furthermore, we argue that they are interconnected. We suggest, however, that an increase (or decrease) of the IIC will not necessarily lead to an increase (or decrease) of the CIC, respectively. These arguments are depicted in the framework presented in figure 2.1.

Figure 2.1 – Interdependency between IIC and CIC in a meta-organisation



3. Methodology

This essay reports on a single case study conducted in the Seaport of Aveiro, in Portugal. One of the advantages of the case study methodology in business and management research relates “to the possibilities of examining and understanding unique, rare, and atypical companies and organizations as well as complex and dynamic events and processes” (Mills *et al.*, 2010, p. 95). Given that a complex reality (a meta-organisation) is being explored and there is no deep comprehension about the complex phenomenon under study, the case study research method was selected. This essay seeks to provide a deep comprehension about the phenomenon of IC creation/deterioration in a specific and complex setting.

Single case study methodology is a widely accepted one. Miles *et al.* (2013, p. 31) acknowledge that “much of qualitative research examines a single case”. Although multiple-case studies offer the possibility of generating theoretical constructs by observing contrasting instances, the option for a single case study is advantageous because it can allow more attention to be given to distinctive and typical characteristics of a particular context. Our aim is to promote a deep understanding of the case within this unique type of environment (Mills *et al.*, 2010). A seaport context is a complex one where interrelations between actors are of the utmost importance to comprehend the phenomenon. Hence, we considered that an in-depth understanding of the context was required, and chose the single case study method because it would allow more attention to be given to the Seaport’s specific characteristics. The usefulness of the single case study is stressed by Dyer and Wilkins (1991), who argue that an in-depth study of a single case allows a deeper understanding of the setting under research and that the use of multiple cases to build theory may neglect important aspects of that setting.

Seaports can be broadly conceptualised as “complex entities supporting the procurement of raw materials, the manufacturing and the distribution of finished goods” (Carbone and De Martino, 2003, p. 306), i.e. as an important element (in a dynamic logistics chain) for the management and coordination of commodities, people and information, which flow through it (Roh *et al.*, 2007; Carbone and De Martino, 2003). From a systems perspective, seaports can be seen as “open systems interacting with their turbulent environments and affecting from the changes in the logistics and supply chain, transport industry, and in a broader concept, the trade and manufacturing industry”. They can also be seen as networks of interrelated subsystems interacting with each other in order to function as a whole (Cetin and Cerit, 2010).

We conducted a case study in a seaport setting because it has the necessary characteristics to differentiate it from other collective organisations (see Gulati *et al.*,

2012) and to provide us with evidence about the attended phenomenon, specifically: it is composed by a network of organisations with activities that may increase the value added output of the seaport (Roh *et al.*, 2007); the system level goal premise is present in this context, i.e. a seaport pursue its own collective goals (de Langen, 2004), notwithstanding the fact that each one of its members pursue their own goals; finally, and crucially, the extent of authority. Regarding authority, Marques *et al.* (2011) consider seaports as mixed-type networks where a public organisation acts as a coordinator whose powers are not unbound. In “whole networks”, not always coordinators have the legal power to impose actions to other network members (Marques *et al.*, 2011).

To attest the arguments presented in the previous sections and depicted in Figure 2.1, we made use of four episodes, pertaining to situations where the creation or deterioration of IC at one level (individual or collective) has positive or negative impacts at the other. These episodes were chosen according to a conceptual question, not by a concern for representativeness (Miles *et al.*, 2013).

During the collection of the data, multiple sources of evidence were used and also a chain of evidence was established. The necessary information was collected through exploratory discussions and interviews with members of the Aveiro’s Port Authority (APA) and also by documentary analysis. Indeed, documentary data played a crucial role in this research. Finally, although briefly, the direct observation method was used in order to understand the operation of a seaport. The selection of the interviewees was based on their knowledge about the seaport processes and about specific episodes and their potential contribution to this essay. Discussions were held and interviews were conducted between April 2010 and September 2014. Notes were taken of all discussions and interviews. The semi-structured interviews were recorded, and the most important parts were transcribed.

In order to understand how the IIC and the CIC in the Seaport relate with each other, we started with an analysis of the empirical context. In a first stage (April 2010 – January 2012), we held four exploratory discussions and conducted two semi-structured interviews with one member of the Port Authority's Board of Directors (MotB), which had an approximate length of 90 minutes each. We sought to gain a better knowledge about a seaport and its internal processes by identifying the various types of firms that compose it and understanding the relationships they establish with each other. It was also our intention to gather details about events that could illustrate the aforementioned relations. The exploratory discussions and interviews, along with the review of literature, suggested that the Seaport possessed the necessary characteristics to be conceptualised as a meta-organisation.

In a second stage (2012-2013) we focused on the chosen events in order to identify how the different actors create and deteriorate their own IC and, chiefly, to determine the impact that those actions had in other actors' IC and on the CIC. Also, the (positive or negative) impact of changes in CIC on individual firms' IC was explored. In this stage, four semi-structured interviews to the MotB were conducted. This interviewee was fundamental to our research not only due to his technical knowledge regarding maritime transportation and logistics but also due to his knowledge about several important events that occurred or were occurring in the seaport. These interviews were complemented and triangulated with a 2 hour semi-structured interview with an APA's Business Development Manager (BDM) in June 2012, and another two interviews (in June 2012 and February 2013) with an ITsM (the first was a preliminary one lasting about 30 minutes and the second lasting 2 hours). The interview with the BDM was very fruitful since the interviewee had a general knowledge about all the episodes under analysis. The interviews conducted with the ITsM, who is a regular collaborator of the "Portuguese Ports Association" portal, helped us to collect information about the technical details of

the Seaport of Aveiro's IT System, and also about the whole developments and main events that occurred since its beginning. Finally, an unstructured interview was held with a Responsible for the Environmental Area (RftE), who not only described how the APA's environmental system works, but also provided important insights about its impact on the port community. This interview took about 75 minutes.

In 2014 we conducted two complementary semi-structured interviews with the MotB and the ItsM in order to better precise some information regarding two illustrations that will be depicted below: "The strikes" and "The IT system". These interviews had an approximate length of 30 minutes each.

Documentary analysis was also made and it was crucial in this research. Documents were collected in APA between June and August 2012: these included e-mails, faxes, contracts and internal memos concerning relationships between the Port Authority and other members of the Seaport, and also between members themselves. A deep analysis regarding the APA's Strategic Plan and its Environmental Management System was also conducted. Environmental management manuals and progress reports concerning the Environmental Management System were of the utmost importance. The progress reports allowed us to analyse the four types of plans related to it: training plans, monitoring plans, internal emergency plans and internal auditing plans. All those documents were available when requested due to the fact that the Port Authority is a public and state owned organisation. Furthermore, several other documents were collected from external sources, such as sustainability reports or annual reports and accounts. The high media coverage regarding the problem of the strikes occurring in the Seaport (as we will illustrate bellow), provided significant records such as interviews held to the press by different actors. This type of data allowed us to better depict the episode.

Regarding the data analysis, we followed the five stages of analysis suggested by Yin (2011): compiling, disassembling and reassembling data, and then interpreting and concluding. The whole process was an iterative one.

4. The case study

The Seaport of Aveiro is a multi-functional Portuguese seaport with an important role in serving the industrial sector in central and north of Portugal, as well as in central Spain. It plays a key role in the economic development of the ‘centre’ region in Portugal. Within the Seaport of Aveiro, several private actors develop their activities along with public ones, such as the Port Authority.

The Seaport is administered by the APA, an organisation with exclusively public capitals. We consider that the APA is the one entity that ‘represents’ the collective. The port authority can be defined as the ‘cluster manager’ and, thus, the most central actor (de Langen, 2004), whose objective is to improve the quality of collective action regimes in port clusters (de Langen and Visser, 2005). However, besides solving collective action problems, port authorities should also seek to develop the port network by creating core competencies, thus ensuring port competitiveness (Notteboom and Winkelmans, 2001; Marques *et al.*, 2011). They can play an important role through different initiatives such as by creating opportunities for value-added logistics, stimulating logistics polarisation, developing information systems, participating in the planning and/or implementation of new transport services, or developing strategic relationships with other organisations (Notteboom and Winkelmans, 2001).

We suggest that within a seaport the creation or deterioration of IC may occur in two ways: first, members' individual IC may have a positive or negative impact on the collective IC; second, collective IC may also have impact at the individual level (see figure 2.1 above). The following illustrations entail instances of such situations.

4.1. The new business unit

Within the Seaport of Aveiro there is an organisation (an operator) that belongs to a big Portuguese corporation, providing services of cargo handling, warehousing, distribution and logistics. Having already been granted (in 2001) with the concession of the Aveiro South Terminal, this operator was in 2008 granted with the use of a space in the Dry Bulk Terminal of the Seaport. This involved a considerable investment, including the creation of a new business unit and a new brand. This new business unit (an agribulk terminal) started its commercial operations in August 2008. Along with the (major) investment in tangible assets, this project led to an increase of the operator's IC through several different ways. For example, the concession of the space and the creation and licensing of the new brand are by definition investments in Structural Capital. They also developed certified internal procedures regarding quality management and food safety management system, respectively, which is one more example of IC development.

This investment in a new brand not only created awareness of the new service provided by the operator, thus developing relational intellectual capital for the operator, but also increased the reputation of the whole Seaport. According to an APA's MotB:

“The Seaport's image clearly was reinforced. It is a new variable in terms of value proposition for our clients. We didn't have any facilities with those characteristics. Also, by making such a huge investment, the

operator gave a proof of confidence in the Seaport, which is a positive signal for the Seaports' reputation (...). When they sell themselves [the new brand] to their clients, they also sell the Seaport”.

This means that there was an improvement of CIC as a consequence of the increase in the operator's IIC. On the other hand, by including the operator in its promotion actions, the Seaport was developing not only its CIC, but also the operator's IIC. The same MotB added that:

“In presentations of the Seaport promoted by the Port Authority, they started to include a presentation of the operator's new brand in order to create awareness towards the Port brand”.

IIC and CIC were also developed in other ways. This investment led to the creation of new procedures and new competencies for the operator. In addition, given that within a seaport, organisations are part of a larger network intended to provide a collective service to the customer, new competencies had to be developed for the whole Seaport. The MotB claimed that:

“There was [now] a new market segment that would have to be handled in a different way (...) and the operator cannot act alone. For example, they had to train stevedores specifically for that unit”.

However, in 2013 there were reasons to consider that the investment was also leading to a collective intellectual liability. Clients had certain expectations regarding the use of this new installation and these expectations were somewhat unfulfilled. Indeed, the MotB argued that:

“The project was expected to have a much higher market share than the one we are experiencing. Customers had expectations that the project would be very successful. [But the lack of success means that] the

reverse happens. The initial proof of trust also becomes a proof of distrust”.

4.2. The strikes

Dockers pools are organisations responsible for managing ports’ workforce. In the Seaport of Aveiro, the Dockers Pool is a legal association which employs most of the stevedores’ work force. This association includes port operators and the stevedores’ Union (henceforth, the ‘Union’). When port operators need to perform any operation, they contract stevedores, paying their hourly fees. The Union aims to protect the stevedores’ interests.

Conflicts between port operators and the Union are relatively frequent in the Seaport of Aveiro. In 2009 a major conflict has arisen. Dockers Pool’s costs surpassed their revenues, and in order to solve this situation, its management proposed a decrease in the stevedores’ wages, but the Union was against this solution. After several meetings between the Dockers Pool, the National Regulator and the Port Authority, no agreement was reached and the Union went on strike. As a consequence the Seaport closed for three weeks.

In 2011 another conflict led to another strike. In the first week of December 2011, the Dockers Pool declared its insolvency, affecting more than 60 Seaport workers. The problems were similar to those felt in 2009. In an interview to a newspaper ², APA’s president stated that “... ETP [the Dockers Pool] does not have sufficient revenues to cover the expenses. In 2009 there was already a strike due to these problems...”. The

² Diário Económico, 15 December 2011

Union reacted by issuing a pre-warning for strike dated for the 24th and 29th December. This warning threatened to spread to other Portuguese seaports, and the presidents of the five biggest Portuguese port communities issued a joint communication were they alerted for the “situation of imminent rupture in national ports”³. They also alerted to the serious consequences that a paralysis of the seaports might have on the Portuguese economy.

In a comment to the Portuguese press⁴, APA’s president of the board considered that this strike was “unacceptable and [would] only contribute to worsen the situation of the Port”. In an interview to a newspaper⁵ the vice president of the Confederation of Maritime and Port Unions considered that the stop would have a serious impact on exports. He also claimed that “it will affect the deadlines and the confidence of customers who may switch to other ports causing [Portugal] to lose competitiveness”. Several paralyses occurred in Port operations, involving different actors.

These strikes not only resulted in financial losses for the Seaport and several other entities, but also had a negative impact on the IC of the Seaport, namely regarding its image, which was the main concern for the president of IPTM (*for* ‘Instituto Portuário e dos Transportes Marítimos’) in an interview given to one of the most important Portuguese economic newspapers⁶. Also according to the Executive Director of the association of shipping agents “the worst is that a port that starts to have strikes loses ships and cannot persuade the ship-owners to use Portugal as a scale”⁷. Once again we can infer from these statements that strikes deteriorated the Seaport’s relational capital. According to an APA’s Business Development Manager:

³ Diário Económico, 15 December 2011

⁴ Ionline, 24 December 2011

⁵ Dinheirovivo, 9 January 2012

⁶ Jornal de Negócios, 2 October 2012

⁷ Ionline, 10 January 2012

“[The Seaport] will take a lot of time to recover his image after all this”.

The strikes also had negative consequences for the several organisations within the Seaport. They were also suffering, with their own logistic procedures being affected. Several processes had to be changed in order to respond to the contingency of not having the full workforce at disposal. According to the president of one of the biggest Portuguese transport firms “the strike is jeopardising the deadlines” and he was absolutely certain “that many companies will lose orders”⁸. Also, perishable products were being diverted to Spanish ports. Thus, evidence collected suggested that, at an individual level, there was a deterioration of IC, namely in terms of structural and relational capital.

4.3. The Environmental Management System

In September 2001, APA implemented an Environmental Management System (EMS), thus investing in IC. Given that APA’s goals are linked with the Seaport’s goals, APA tried to change not only its own environmental culture but all the Seaport culture. Indeed, APA has made several commitments in its environmental management manuals in order to sensitise and involve the port community in adopting good environmental management practices. This means that APA also had a collective goal, i.e. to increase the IC of the whole Seaport. This Environmental Management System should thus be regarded as an investment in structural capital not only for APA, but at the same time for the collective, aiming to create value for the whole Seaport. Thus, we also consider the EMS as an investment in “structural capital” for the whole Seaport: this action increased the CIC.

⁸ Jornal de Negócios, 2 October 2012

The EMS was extended to the whole Seaport through the use of internal audits. Also, since 2005, APA has made annual environmental surveys of the whole port community. According to an APA's Responsible for the Environmental Area (RftE), the main goal is to detect non-conformities regarding environmental issues. After these are analysed, corrective and preventive actions are defined and then communicated to the organisations. APA cannot impose rules: they can only issue recommendations.

Our documentary analysis provided us with several examples of non-conformities, such as vestiges of burnings, oil drums or even spills of cereals into the Aveiro estuary. APA's actions were to communicate these facts to the intervening firms, trying to sensitise them to take appropriate measures (such as the use of tarpaulins between the ship and the pier, which was a practice that had fallen into disuse). In addition, we found several complaints about pollution due to the fact that some organisations were following bad procedures regarding environmental issues. A serious case referred to a company that was polluting the air with dust that resulted from the movement of their cargos (cement). Their procedures in terms of environmental safety were not appropriate. Consequently, the Port Authority received several complaints from the population living near the Seaport and acted by sending a letter to this company asking for measures to minimise the pollution. The MotB told us that in this case:

“APA was perceived as representing the whole Seaport”.

These examples help us to illustrate how bad procedures that can be perceived as individual ILs were leading to a collective liability (by deteriorating the relational capital of the Seaport).

Although APA cannot intervene in each organisation's environmental procedures, most Seaport's organisations usually tried to solve the non-conformities detected. The RftE considered that the survey itself:

“Created some awareness about environmental issues in many of the targeted organisations”.

The internal audits to the port community and the subsequent communication of non-conformities developed an environmental concern on those audited. This much is stated, for instance, in an EMS progress report (2001-2003, p. 19), which mentions that “internal audits to the port community and, in particular, the subsequent communication of identified non-conformities to those responsible for the audited installations, resulted in greater visibility of the EMS and environmental concern of those referred”. Thus, APA has the perception that organisations within the Seaport are committed with the improvement of their environmental procedures.

This study suggests that the EMS resulted in an increase of several audited firms' IC, namely by promoting the development of an environmental orientation within those firms. Furthermore, as a consequence of the implementation of the EMS, APA has been making several investments in training, thus developing new competencies for those organisations, and consequently their own IC. Numerous environmental training courses were offered in APA, additional training was given to some agents from stevedoring companies operating in the Seaport of Aveiro and simulations in firefighting and combating oil pollution involving different actors (such as the Firefight Corporation, nearby municipalities or the tugs concessionaire) were made. These are all examples of how individual capacities and thus IIC were created through the implementation of an EMS aimed to develop the CIC.

4.4. The IT system

In 1997, a network IT system called IT Gespor was implemented in the Seaport of Aveiro, aiming to facilitate ship dispatch. Before that, all the procedures and relationships between the Seaport's members involved the use of paper, telephone or fax, for example, with all related inconveniences, such as higher costs, leading to higher prices.

By implementing and developing the IT System (Gespor) in the whole Seaport, APA was investing in intangibles (the software), and also in the development of new and better procedures, thus increasing the whole Seaport's collective structural IC. The Port Authority wanted to change procedures in order to increase Seaport performance. On the other hand, this investment allowed for the development of IIC for the involved Seaport's members, due to the fact that their own processes were improved. The IT System Manager (ITsM) told us that:

“They quickly understood the benefits of having new and better procedures (...). Before, all was done on paper, they had to deliver those papers in a certain place, they had to use phone or fax (...) and a number of these operations (travel, phone calls, ...) was not necessary anymore (...) and quickly they realised that there was much to gain”.

Along time, this system has known several improvements, which meant a reduction in physical documents exchanged between entities. At stake is the creation of CIC in the form of IAs.

However, not all investments in the IT software were successful. When the Seaport upgraded the software for the windows version, thus investing once again in collective IC, the results were not the expected ones. Due to the interface of the software,

communication between the organisations worsened. Thus, organisations could not do their work remotely as they were used to. Consequently, although there was an investment in collective IC, an individual IL emerged for several actors due to the fact that they had to follow the newly implemented procedures, which diminished performance, and they could not do anything to change it. According to the ITsM:

“The organisations would rather prefer to return to the previous system, the use of paper, because it was impossible to work in those conditions (...). In this period of time we [APA] received a lot of complaints”.

As a result of this, APA had to work on a new solution that involved the creation of an intranet where most members could participate (due to their physical proximity) and on which they could exchange information at the speed they were used to.

In October 2005, Gespor's technological platforms were updated and new functions were introduced, allowing for the planning of operations and the electronic exchange of data (operational information) in a web environment. It also allowed for the alignment of processes, information exchange and also the creation of collective goals. Several public authorities could thus exchange data between them. These new procedures were also a consequence of a project developed by the Portuguese ports' association with external consultants. This project went live in 26.09.2002 and was implemented in 2009 by the name JUP (for '*Janela Única Portuária*'). It aimed to simplify, normalise and harmonise all the Portuguese ports' procedures. One of the main procedures that the Seaport of Aveiro intended to implement in its IT Gespor software was one involving Customs – the electronic cargo manifest – one which is related to cargo control.

With the electronic manifest, which had to be electronically approved by Customs, APA and other Portuguese port authorities intended to implement an electronic procedure aimed to decrease bureaucracy, specifically the number of documents that were

exchanged in the circuit and also the average time of cargo manifest approval. Paper was still used, namely regarding official authorisations.

The main problem was that, in 2005, the Seaport of Aveiro's Customs had their own procedures implemented (most of them part of their own IT system) and they preferred to continue using them, developing a resistance to change regarding cargo dispatch. According to the APA's ITsM:

“Customs evolved in a different way (...) they did not want to leave the stamps and the embossed presses, and thus developed their IT systems in parallel with the Port management systems until the moment it was absolutely necessary”.

An APA's Business Development Manager claimed that:

“Besides breaking with procedures, there was a risk of loss of reliability of this new computer system regarding what they [Customs] intended”.

The Customs considered that a full integration between the two separate systems would bring safety risks and that the new procedures might destroy value for them. Consequently, they perceived that the ‘electronic cargo manifest’ would translate itself into an IL. This impasse lasted for several years. Customs had their own procedures, their own culture and also APA could not impose the IT Gespor to them as, like APA, they are a public authority.

The point here is that what was, by then, an IA for the Customs – its own procedures – led to an IL for the collective in several ways: on the one hand there was an investment that was not fully exploited. On the other hand, there was a negative impact on the development of a collective culture: the entire port community was being joined around a single system and a key member was not aligned. Also, according to the ITsM:

“The Seaport as a whole was being negatively affected because [without the Custom’s resistance] procedures could be more expedited and the Seaport more efficient”.

However, throughout the process, what started to be seen by Customs as an IL ended up by being considered as a potential IA. This was due to APA’s actions. The MotB commented that:

“The Customs changed from a position of resistance to a position of collaboration and acceptance of the system (...) why? It came a time where [the Customs] understood that [JUP] was a good system and that it would help them in its own work”.

When Customs abdicated of some of their old procedures, the Seaport as whole started to benefit of a more complete and integrated system that could allow it to provide a better service to the end client and thus the collective IC increased.

5. Results and Discussion

The case study allowed us to illustrate how IC is created and deteriorated at both individual and meta-organisational levels of analysis. On the one hand, the relationships between the meta-organisation’s members are crucial for transmitting the knowledge that is embedded in their core competencies and core capabilities (Marti, 2004; Sporleder and Peterson, 2003). Knowledge transfer is a consequence of collaboration and communication and seaports have specific characteristics that encourage these. The “new business unit” illustration provides evidence of how a member of the Seaport, by investing in its own IIC (a new brand or new procedures), enhances other organisations’ IIC (new and better competencies). This is in line with Lee and Song (2010), who claim

that maritime operators' behaviours can affect other actors' strategic decisions by being part of a cooperative network in the same business. To produce collective knowledge in a meta-organisation (and consequently CIC), it is critical the way firms work together, how their tasks interrelate and how their knowledge is integrated in order to create value and competitive advantage for the meta-organisation (Kianto, 2007). Coordination of these firms' knowledge is thus crucial, as well as the presence of a common goal and a shared identity, in order to improve communication and learning. On the other hand, the case study provides strong evidence regarding the interconnectedness between the meta-organisation's and its members' IC. For instance, "The new business unit" illustrates how the Seaport's CIC (specifically its reputation) increased as a consequence of one of its members' investment in a new brand (i.e. in IIC). It also illustrates how APA, by creating CIC (namely relational capital), increased the operator's IIC. This IC micro-meso link is supported by Nielsen and Dane-Nielsen (2010), who argue that collaboration between entities can be seen as the means to transform knowledge into emergent proprieties at a higher level of analysis and also that higher level phenomena may have downwardly causal effects on lower level processes.

The interconnection between ICs at different levels of analysis is also portrayed in "the strikes" illustration, although with a different (and negative) collective outcome. CIC decreased as a consequence of the actions of a particular actor – the Union. By defending their associates' interests, the Union was itself increasing its reputation towards its main stakeholders – the stevedores – thus developing its own IIC. However, as time went by, financial and intangible negative consequences arose for both individual members and for the meta-organisation as a whole. Solitander (2011) offers an example in which organisations developed its IC even at the expenses of the collective: she considers that although flows of intellectual capital aiming to protect knowledge can be considered an asset for the organisation (as it prevents the transmission of valuable

knowledge), they also may be considered as liabilities on a societal level. This reinforces our claim that the concept of Intellectual Liabilities not only can be seen from the perspective of an individual firm, but also from a ‘meso’ or macro-level perspective.

The case study also captures the importance of assessing IC in a longitudinal stance. Time is crucial to comprehend changes in IC (Giuliani, 2015). This is portrayed in the “new business unit” illustration, which provides evidence of both IC creation and deterioration over time. On the one hand, iterative collaborative processes between the Seaport and the port operator eventually led to an improved IIC and CIC. On the other hand, there is also evidence that, from a dynamic perspective, negative consequences may also emerge from IC (Giuliani, 2015). Although CIC grew due to this collaboration, a collective liability emerged over time as a consequence of the individual investment. Garcia-Parra *et al.*’s (2009) definition of IL neatly fits this ‘meta-organisational’ approach: the non-fulfilment (by the Seaport) of non-monetary obligations (the seaport’s clients expected a much higher service level due to the dimension of the project) negatively impacted the meta-organisation’s relationship with its customers. “The strikes” illustration also captured this phenomenon. Indeed, there were changes as time went by: the actions of the Union eventually brought about negative impacts for itself. Its reputation decreased at the eyes of several actors, and its IIC suffered. Initially the Union pursued its own interests at the expense of CIC, but over time this fact had negative consequences for that member. A MotB agrees with this rational, by stating that:

“Today [2013], my opinion is that [the strike] destroyed [IC for the Union], but if we had this meeting at the time [2011], probably [its IC] was increasing”.

Both this “temporal” perspective of IC and the micro-meso link proposed by Nilsen and Dane-Nielsen (2010) are present in the “environmental management system”

illustration. This illustration depicts how individual ILs gave place to IAs and how individual firms saw its IC raising as a consequence of an increase in the CIC. In a dynamic and longitudinal perspective, individual ILs (bad procedures) were leading to collective ILs (seaport's bad environmental reputation). These collective ILs were then mitigated by the Seaport (represented by the APA) through the creation of a Collective Intellectual Asset – the EMS: organisations' IIC increased through the development of new and better environmental procedures (in response to the annual auditing) and also through the development of new competencies as a result of collective training. Over time, the Seaport CIC (namely its environmental reputation) increased as result of the development of a collective environmental consciousness.

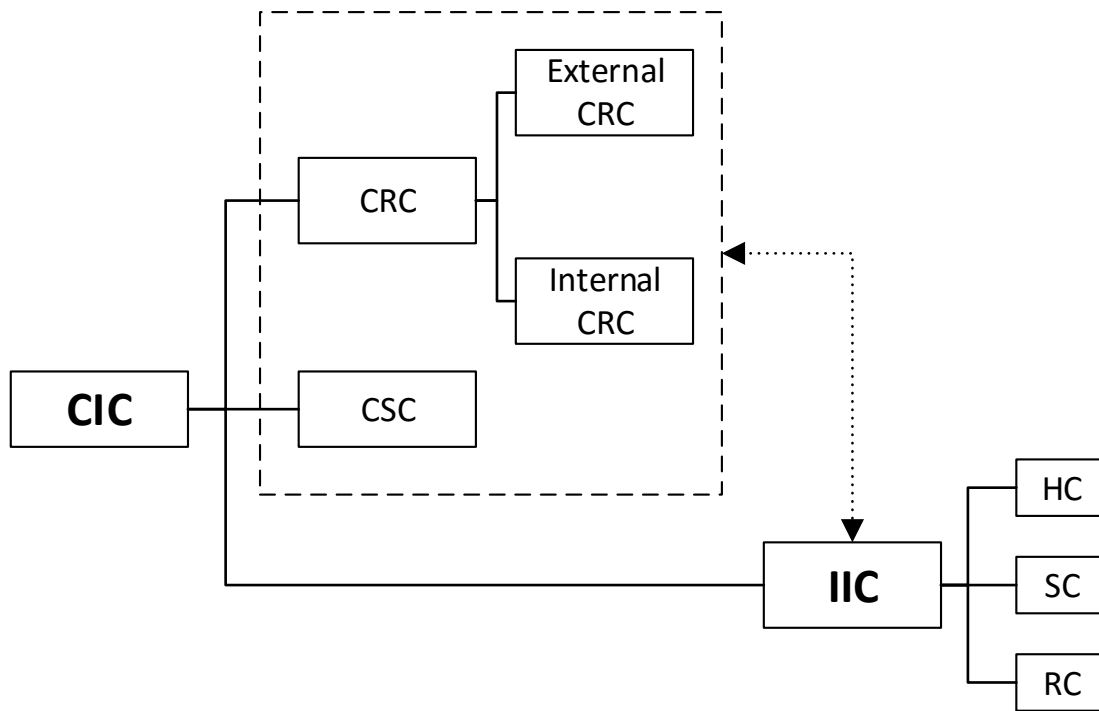
Finally, the “IT system” illustration addresses the issue that although collaboration is crucial to develop IC through knowledge transfer, it is not always easy to attain. Although knowledge transfer is important to develop innovative capacities (Nieves and Osorio, 2013), the resistance of the Customs to adopt a new procedure – the electronic cargo manifest – can be seen as a resistance to change, which is a source of limiting an actor's capacity of absorbing knowledge (Nieves and Osorio, 2013). This illustration also leads to a conclusion similar to previous ones: the relationship between IIC and CIC is dynamic.

The results of our case study allowed us to reflect upon IC at the meta-organisational level. A meta-organisation's CIC appears as a function of both individual and collective IC dimensions: the three traditional IC dimensions (human, structural and relational) when referring to the individual organisations that form the meta-organisation and two collective dimensions, which we label “Collective Structural Capital” (CSC) and “Collective Relational Capital” (CRC). Because we see the meta-organisation as an organisation *per se*, both these concepts were adapted from the ones applied at a ‘micro’

level. On the one hand, CSC includes systems, networks, culture and values, and elements of intellectual property, pertaining to the meta-organisation. On the other hand CRC refers to the relationships between the meta-organisation and its stakeholders. Although acknowledging the importance of the human capital in this context, we not contemplate the existence of a ‘collective human capital’. Instead, we argue that the human capital “belongs” to the very interdependent individual firms that compose the meta-organisation’s network.

In a meta-organisation, collaboration (or non-collaboration) may occur at two different levels: between the meta-organisation and its actors and also between the network’s actors. Although acknowledging that the meta-organisation’ CSC can encompass the relationships between the meta-organisation and its members, we propose that the meta-organisation’s CRC should be further divided into two dimensions: one regarding the relationships between the meta-organisation and its external actors (e.g. the population) and the other between the meta-organisation and its internal actors. We call them ‘Collective External Relational Capital’ and ‘Collective Internal Relational Capital’, respectively. An individual member’s IIC is a function of its Human, Structural and Relational Capital, as well as the above collective dimensions. A framework, in which these dimensions and effects are articulated, is presented in Figure 2.2.

Figure 2.2 – IC creation and deterioration in a meta-organisation



We found that the above individual and collective dimensions are strongly interrelated, which means that members' investment in the individual dimensions of IC may have a positive (or negative) effect on the meta-organisation's CIC. On the other hand, 'collective' investments may also have different impacts on members' IIC. We found that the creation or deterioration of IC by an individual member may lead to the development or the deterioration of the collective IC, and that the relationship between both levels may be less straightforward. Firstly, the creation of IC by individual organisations may lead to the emergence of a CIL. Secondly, increases or decreases of CIC may have distinct impacts at the individual level. This reinforces our claim that the concept of IL can also be seen from a 'meso' or macro-level perspective.

6. Conclusions

This essay addresses an important gap in IC literature: the processes of IC creation and deterioration in meta-organisations and, specifically, the relationship between IC at a ‘micro’ and ‘meso’ levels of analysis. Its objective has been also to comprehend those relationships from a longitudinal perspective. A case study conducted in the Portuguese Seaport of Aveiro provided a set of illustrations depicting the interdependencies between a meta-organisation and its members, which allowed us to better comprehend the importance of assessing IC at both these levels. We suggest that in such settings two types of IC must be distinguished: the CIC pertaining to the meta-organisation and the IIC of its members. We also argue that the traditional models on which most ‘macro’ and ‘meso’ IC models are built from, do not fit in this type of setting which we see as an organisation *per se*.

In a more dynamic stance, results suggest that relationships between IIC and CIC develop and evolve throughout time. There are situations whereby IC may be created or even deteriorated at both individual and collective levels of analysis in an interdependent way as time goes by. In the “strikes” illustration, for instance, we gathered evidence suggesting that individual organisations may try to increase their own IC at the expense of the collective, but it may well be the case that this results in an individual liability for those organisations. *A contrario*, there may be instances of organisations incurring in intellectual liabilities when they prioritise collective interests, but in the medium and long term the increase in CIC may translate into individual assets for the same organisations.

In general, this essay contributes to the literature by showing that although a meta-organisation is composed by individual organisations, there are CIC dimensions that go beyond the individual ones. Hence, the IC of a meta-organisation is different from the sum of the ICs of the individual organisations composing it. Also, although both IIC and

CIC may be assessed separately, one has to be aware of the interrelationship between the ‘individual’ and ‘collective’ IC dimensions. Our arguments are not entirely in line with those of Nielsen and Dane-Nielsen (2010), who suggest that the CIC is greater than the sum of individual knowledge. This may be true in some situations. However, there may be cases in which increases of the IIC will not necessarily lead to an increase of the CIC. CIL may emerge from individual organisations’ investment in their own intellectual capital. In such circumstances, the CIC may become smaller than the sum of IIC. Despite the validity of the interpretations provided in the context of the case study, generalisation to other situations should only be conducted in a theoretically framed manner.

In this essay, a seaport is conceptualised as a meta-organisation, which has a coordinator – usually in the form of a port authority – that strives to ensure the attainment of collective goals, but characterised by the lack of a formal authority towards several members (within a port, both private and public organisations coexist). From a managerial perspective this coordinator is likely to bear in mind the above relationships to perform its role with the objective of increasing CIC.

We believe that future literature should seek to develop even further the ‘managerial’ implications, coordinator’s view, of the problem of IC in a meta-organisation. IIC and CIC can be created not only by direct investments in intangibles but also by cooperation or even competition between actors. Liabilities may even emerge as a consequence of different relationships between those actors. Therefore, future research could focus on the impact that different types of relationships may have upon the creation and deterioration of IC within this type of organisation. Specifically, IC literature should address the impact that power balance/imbalance between organisations may have upon the CIC, namely in the case of a meta-organisation, where its coordinator may not be able to make use of a more “coercive” type of power. In the particular case of seaports, it

would be very useful for the port authority management to know in which way those relationships may affect the seaport's IC. Due to their role as port coordinators, port authorities may seek to influence or motivate other actors to create IC, namely by transferring knowledge with each other. Given that several processes of IC creation and deterioration can coexist, it is very important that a port authority can manage these processes in order to increase the seaport's competitiveness. Thus, future research could be focused on the mechanisms network coordinators can use in order to create CIC – not only directly, *but also indirectly*, as a result of more or less collaborative (or even conflicting) relationships established throughout the network. Further research should also explore how investments in tangible assets may lead to both individual and collective intellectual assets and/or liabilities (e.g. the creation of a new terminal on a seaport). Finally, it would be important to replicate this study in similar contexts with similar characteristics, namely the possibility of distinguish the whole's CIC from individual members' IIC and the coexistence of public and private actors possessing different levels of power.

Chapter 3 – A Relational Approach to the Creation and Deterioration of Intellectual Capital in a Meta-Organisation

Abstract

With this essay we address several gaps in the literature regarding Intellectual Capital (IC). Although the study of IC in ‘macro’ level units such as nations or regions has grown in the last few years, there are still underexplored empirical contexts. That is the case of seaports, that we conceptualise as meta-organisations with generic goals of economic development for themselves and for regions where they are located. A seaport can be conceptualised as an organisation *per se*, although one composed of several organisations connected by interdependent relationships and, typically, with no formal hierarchy. The complexity of the interactions between the various actors turns the seaport into a very interesting empirical ground for research. Although these actors provide a “collective service” and thus collaboration is critical in order to create value for them, for the seaport and for the client, conflictive behaviours may also emerge. Furthermore, and as long as the authors are aware, the concept of intellectual liability has not been applied to this type of context.

Our essay explores the main factors that, from a relational approach, are behind the creation and deterioration of a meta-organisation’s Collective Intellectual Capital, and seeks to understand how these factors are articulated in the production of such effects. This is done through a case study conducted in the Seaport of Aveiro, Portugal. The main conclusion that emerges from this study is that the compatibility/incompatibility of goals and power can be crucial drivers for the creation or deterioration of Collective Intellectual Capital in a seaport context. An integrated framework is presented relating compatibility/incompatibility of goals and power with collaborative and conflictive behaviour in order to create collective intellectual assets or lead to collective intellectual liabilities. This framework depicts both dyadic and more complex relationships i.e. not only relationships established between seaport’s actors but also between them and the meta-organisation. This study contributes to the development of IC research and also provides practitioners with valuable insights, namely those responsible for network coordinator organisations (such as port authorities) who are concerned with the achievement of a meta-organisation’s goals.

1. Introduction

Organisations' intangible resources are increasingly seen as important drivers, for some *the* most important drivers, of organisations' sustainable competitive advantages (Marti, 2004; Palacios and Galván, 2006) and, as such, have been the object of a vast body of research. Indeed, several authors argue that dependency on traditional tangible resources has been decreasing (Alwis *et al.*, 2003). Those often overlooked resources have been labelled the 'Intellectual Capital' (IC) of an organisation. IC is composed of the intangible sources of value related to employees' capabilities (human capital), the organisations' resources and processes (structural capital) and the relationships with their stakeholders (relational capital) (Kujansivu, 2008). According to Zabala *et al.* (2005), relational capital not only encompasses intellectual assets that bring value for the organisation from the relationships with its main stakeholders, but also those intellectual assets which influence the perception of the organisation's identity. They call the latter 'Brand Capital'.

However, and bar for some studies that have explored the strategic importance of IC from a 'macro' and 'meso' perspectives such as those of nations, regions or cities (Meditinos *et al.*, 2010; Lin and Edvinsson, 2011; Bounfour and Edvinsson, 2005; Schiuma *et al.*, 2008), most of the research on IC has focused on individual organisations (Guthrie *et al.*, 2012; Tan *et al.*, 2008; Swart, 2006) and there is a paucity of IC research in entities such as inter-organisational networks and meta-organisations. The same can be asserted regarding "the ways in which intellectual capital is created and maintained as a dynamic process" (Pöyhönen and Smedlund, 2004, pp. 351-352).

In this essay, we aim to address these gaps by exploring the main factors underlying IC creation and deterioration in the context of a meta-organisation: a seaport. Meta-organisations are "networks of firms or individuals not bound by authority based

on employment relationships, but characterised by a system-level goal” (Gulati *et al.*, 2012, p. 573). A seaport fits into this definition (see chapter 1): it is an organisation composed of several other organisations (Lemyre *et al.*, 2010). Its members are “those groups or individuals who are affected by the organization as well as those who can affect it” (Ackermann and Eden, 2011, p. 179). Indeed, a seaport is composed of “a *structure of elements* (subsidiaries, divisions, teams, individual people) that have *resources* and *repertoires of action* (competences), with *decision rules* that govern *choice* from those repertoires, to achieve *goals*, in *coordination* (which includes governance) between those elements” (Nooteboom, 2004, p. 16). It can thus be described as a complex, multi-functional and multi-institutional organisation where actors are connected with each other as suppliers or buyers (in a supply chain logic). At stake is a coordinated single team providing a maritime logistics service in order to create higher value for the final customer/user (Lee and Song, 2010; Bichou and Gray, 2005). Value can be created and increased when customers perceive the seaport service as valuable and are thus willing to purchase it, something that depends on how well the logistics system as a whole responds to these customers’ demands (Lee and Song, 2010). Customer satisfaction and loyalty is affected by the logistic capabilities and thus by the quality of service (Wu and Chou, 2007) of the entire system. The interactions between a seaport’s actors can be complex, due to factors such as power, trust, conflict or cooperation, and also their positions may change with time (Costa and Cunha, 2010). We adopt a relational approach, focusing on characteristics of the social relationships between several actors. We try to analyse how the meta-organisation is operating as a relational system and how this influences the seaport’s capability to create IC (Pöyhönen and Smedlund, 2004) but also how it influences the deterioration of IC.

The process of IC creation/deterioration in meta-organisations is much more complex than that of single firms. In the case of a seaport, we already presented evidence

that IC may not only be created, but also destroyed at two different levels of analysis: the whole seaport, i.e. the meta-organisational level, and the firm's level (of its members). In chapter 2 we labelled the meta-organisation's IC as "collective IC" (CIC) and its members' IC as "individual IC" (IIC). In that chapter we argued that both forms of IC are interrelated in such a context, since both IC creation and deterioration at one level might result in an increase or decrease of IC at the other level. Therefore, a seaport's IC is probably different from the sum of its members' IC.

Seaport's members (or actors) have a common interest in the seaport – its economic development – and they may benefit from a higher cooperation and lower transaction costs (de Langen, 2006). By cooperating, organisations may acquire the knowledge that they do not have, thus developing their own IIC. From the meta-organisation's level of analysis, cooperation between its members is a critical factor for the creation of CIC. However, relationships can also be of conflict, which may lead to CIC deterioration. Of course, cooperation to achieve collective goals may not (always) develop spontaneously (de Langen, 2004).

In this essay, we suggest that in a meta-organisation such as a seaport the phenomenon of creation or deterioration of CIC is mainly explained by the types of relationships occurring between organisations composing the network. In section 2 we derive a basic framework of analysis of that phenomenon. This framework involves two dimensions of relationships between members, and their impact on the CIC, of the meta-organisation: collaboration and conflict. Then, after a methodological note and the description of the research site, we present and discuss the findings of our empirical study and, in so doing, we develop that framework. This is done in section 3. We conclude the essay, in section 4, with a very brief summary of our key conclusions and some suggestions for future research.

2. The roles of collaboration and conflict in IC creation and deterioration

Seaports are usually envisaged as politically cohesive entities or as stakeholders' consensual spaces, where a port community collaborates in the pursuing of common goals (Olivier and Slack, 2006). Synergies between seaport members must be developed in order to provide a reliable service and thus it is fundamental that they have a common goal (to improve their coordination), common values and standard norms (Carbone and De Martino, 2003; Pechlander *et al.*, 2010). Within a seaport we can find an inter-organisational network, which encompasses the actors (individuals and organisations) and the relationships between them, the resources flowing in those relationships, and its coordinating and steering mechanisms (Pöyhönen and Smedlund, 2004). It is composed of all the "relatively constant, intentional and goal-directed collaborative arrangements" between various organisations that can facilitate mutual learning and can lead to the production and stabilisation of routines by putting members' knowledge into action, thus creating IC (Pöyhönen and Smedlund, 2004, p. 352; Lee and Song, 2010). Collaboration is, thus, a particularly important form of collective behaviour between actors that interact with each other as being part of a network (Polenske, 2004). At stake may be joint production, problem solving, the development of new practices or products, exchanging experiences from different projects, sharing codified knowledge, developing skills, training, attitude development, management development, or organisational change (Nooteboom, 2004). This means that in this type of setting collaborative behaviours (which we understand as synonymous to collaboration) are crucial to the creation of IC.

In inter-organisational literature, several authors use the cooperation, collaboration and even coordination concepts interchangeably (McNamara, 2012). However, others consider those concepts as regarding different types of interaction (McNamara, 2012). Most of them distinguish cooperation from collaboration (Ketchen *et*

al., 2008; Polenske, 2004; Sheth and Parvatiyar, 1992; McNamara, 2012). For example, Ketchen *et al.* (2008) consider cooperation as pertaining to contractual relationships (e.g. outsourcing), and collaboration as referring to trust-based relationships moved by a common goal. However, such distinctions are made in contexts of organisations that can operate independently from one another in order to achieve their individual goals (McNamara, 2012). These distinctions are usually made in contexts such as those of business alliances (Sheth and Parvatiyar, 1992), supply chains (Ketchen *et al.*, 2008) or vertical arrangements (Gulati *et al.*, 2005). This is not the case of seaports, where tasks are interconnected and cannot be accomplished individually, which means that there is some sort of collective responsibility shared between its members (McNamara, 2012).

McNamara (2012, p. 391) defines collaboration as an “interaction between participants who work together to pursue complex goals based on shared interests and a collective responsibility for interconnected tasks which cannot be accomplished individually”. This definition fits into the context of seaports, in which the working together of actors in a collaborative manner leads to quick, responsive, flexible and reliable services at a lower price, fulfilling customer needs, and thus to the creation of value (Lee and Song, 2010). We will use the “collaboration” term from now on, although recognising that collaboration may have different levels. Hagedoorn *et al.* (2000) argue that the need to collaborate might result from how an organisation accesses and deals with new knowledge. Knowledge should be managed in order to accumulate IC and provide organisations with sustainable competitive advantages (Seleim and Khalil, 2011). The creation of IC in a meta-organisation depends on the adoption of a networking (collaborative) behaviour by its members, i.e. “the behavior to interact with other actors with a view to transferring information, exchanging views, explaining, understanding and comparing different types of knowledge, and making new combinations” (Visser, 2009, p. 173).

Collaboration can develop IC at both the individual and the collective levels. From an individual organisation level of analysis, it leads to the development of IIC. When organisations share and co-develop resources and capacities, building long-term resources, they can co-evolve, thus increasing the possibility of obtaining benefits associated with the relationship (Joia and Malheiros, 2009). Networking improves the flow of information (Sporleder and Peterson, 2003), providing organisations with the knowledge that they cannot obtain in-house (Visser, 2009). Organisations' ability to create, exchange or share knowledge develops new capacities, resulting in an increase of their IC (Joia and Malheiros, 2009; Seleim and Khalil, 2011). Organisations may thus collaborate in order to get a specific knowledge or to collaboratively create new knowledge (Forsman and Solitander, 2003). Collaboration even develops knowledge about the process of collaboration itself, providing the organisation with better capabilities when entering new relationships (Forsman and Solitander, 2003). This is why some have argued that "most of new knowledge creation happens in networks, not within organisations" (Pöyhönen and Smedlund, 2004, p. 356).

From a meta-organisation level of analysis, CIC can be enhanced if all members work in collaboration with each other as a single team (Lee and Song, 2010). According to network-level theories, a network involves many organisations which work, in a collaborative way, towards a common goal, where the success of the individual organisation may or may not be critical to the success of the entire network and its customer or client group (Provan *et al.*, 2007). The goal of the meta-organisation is the optimisation of the whole network even if this is done in detriment of an actor or group of actors in the network (Provan *et al.*, 2007). We are assuming in this study that collaboration between individual members is not harmful for the entire meta-organisation, although we can theorise that in some circumstances collaboration may destroy CIC.

Indeed, given its nature as a meta-organisation, the seaport has its own goals – collective ones. In seaports, collective goals are usually set up by a focal actor: a network coordinator, usually a port authority (Verhoeven, 2010). Therefore, the seaport's collective goals may be identified by reference to this specific actor, typically a public organisation (Notteboom and Winkelmans, 2002). Crucially, members' individual goals may *or may not* be compatible with collective ones, and the network coordinator must try to establish a balance between them (Winkler, 2006). Common interests may be overlooked given the individual goals of several actors (Notteboom and Winkelmans, 2002), something that may lead to negotiations or conflicts (Winkler, 2006). This happens due to the specific characteristics of this type of organisation, where typically there is no formal hierarchy, members are interdependent and power is asymmetrically distributed (Winkler, 2006). To achieve common goals, it is necessary that members consent not only on the goals but also on the procedures to achieve those (Ziggers *et al.*, 2010) and that's why in inter-organisational networks it is difficult to define mutual goals between members (Winkler, 2006). Therefore, the seaport seen as meta-organisation may have its performance (including IC's) limited due to a mix of shared and also firm-level goals, values and experiences (Ketchen and Hult, 2007). Furthermore, according to its degree of power and interest, players may support (or sabotage) the organisation's strategy (Ackermann and Eden, 2011). Thus, collaboration may be difficult to attain: in some situations at least, members' goals may diverge from, and even be incompatible with, the seaport's collective goals and consequently those members may behave in non-collaborative way (de Langen, 2006). In a seaport we can find problems regarding collaboration at the organisational (i.e. within the firm), the dyadic and the network levels of analysis (Gagalyuk *et al.*, 2010). While at a dyadic level, the focus is on the relationship between two actors, at the network level several actors interact and those relationships are captured from a higher level of analysis (Forsman and Solitander, 2003; Borgatti and Foster, 2003).

Seaport's members may not always show collaborative behaviours. In certain circumstances organisations may adopt conflictive behaviours towards other actors. In this study we consider that conflictive behaviours exist when an individual organisation behaves in such a way that collaboration, as defined previously, is impeded. Our understanding is congruent with the vision of conflict proposed by Bradford *et al.* (2004, p. 182), who conceptualise it as “the behaviors or feelings of interdependent parties in response to potential or actual obstructions that impede one or more of the parties achieving their goals”. This is a relatively broad definition that includes situations of ‘open’ conflict as well as situations of more passive ‘non-collaboration’. Conflictive behaviours are likely to lead to IC deterioration and to what some authors have termed Intellectual Liabilities – ILs – as opposed to Intellectual Assets – IAs.

IC deterioration is a recent theme whose first steps in IC literature have been devoted to individual firms. By following a “balance sheet” logic, Harvey and Lusch (1999) state that in the same way organisations have unrecorded IAs, they may also have unrecorded ILs and thus they should prepare themselves to manage them. Similarly, Giuliani (2013) advanced the intellectual equity concept as the difference between IAs and ILs. ILs may be conceptualised as all “non-monetary obligations related to the stakeholders that the company must fulfil, in order to avoid the depreciation of its intangible assets” (Garcia-Parra *et al.*, 2009, p. 827). This integrated definition has its origins in two different perspectives regarding ILs: as the depreciation of intangible assets (Caddy, 2000; Abeysekera, 2003) and as non-monetary obligations (Garcia-Parra *et al.*, 2009). The first of these two perspectives moves away from the traditional definition of liabilities, trying to identify any potential non-physical source of deterioration of an organisation's value (Caddy, 2000; Stam, 2009; Garcia-Parra *et al.*, 2009; Giuliani, 2013). Some examples may be given: using intangible assets on a bad idea (good decisions increase IC while bad ones give rise to ILs), loss of key personnel, high

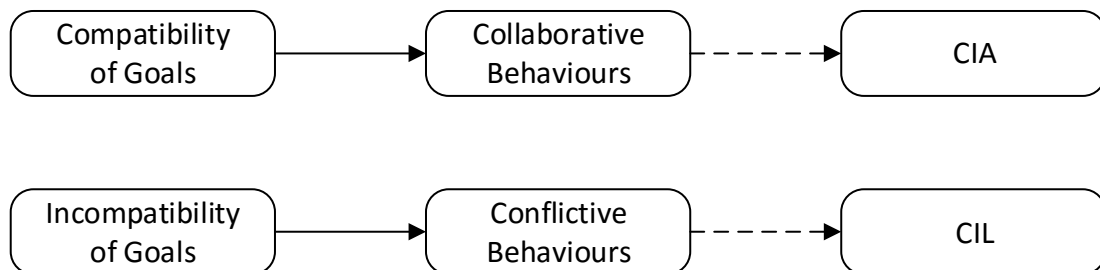
employee turnover (which may decrease an organisation's performance), lack of commitment, lack of competencies or decrease of reputation (which may affect stockholder equity) (Caddy, 2000; Garcia-Parra *et al.*, 2009; Harvey and Lusch, 1999; Giuliani, 2013). The idea of non-monetary obligations, in its turn, involves the non-fulfilment of something expectable such as working conditions, which may cause changes in personnel's attitudes (Garcia-Parra *et al.*, 2009).

Organisations should try to eliminate ILs or to minimise its negative consequences (Caddy, 2000), and it is therefore critical to assess the probability of an IL to emerge (Harvey and Lusch, 1999). In this sense, current ILs should be distinguished from long-term ones, according to the time horizon one considers (Harvey and Lusch, 1999). Regarding certain ILs, we can only assess its impact after a large number of years (Harvey and Lusch, 1999). Indeed, Giuliani (2015) argues that time is a critical factor to better comprehend the emergence of intellectual liabilities as a consequence of investments in IC. Furthermore, the probability of occurrence may be different as well as its economic impact (Harvey and Lusch, 1999).

A seaport is, as we saw, composed of several members relating with each other through different connections (formal or informal) and flows (such as information), in a setting where two types of goal coexist: each member's own goals and the network-level goals which can only be achieved if members work together towards them (Ziggers *et al.*, 2010; Gagalyuk *et al.*, 2010). Although members of a network can share common goals, they also have their individual ones and compatibility of members' goals is needed in order to get collaboration in a business (Gulati *et al.*, 2005; Costa and Cunha, 2010; Sheth and Parvatiyar, 1992). Collaboration is not always easy to attain, and organisations' goals may even be incompatible.

In general, the literature seems to suggest that, at a meta-organisational level, Collective Intellectual Assets (CIA) may be created or Collective Intellectual Liabilities (CIL) may emerge as a consequence of collaborative or conflictive behaviours, respectively. According to Kaufmann and Roessing (2005, p. 237), interests may be in conflict when “the parties’ goals are incompatible”. Whereas conflictive behaviours are likely to emerge when goals are incompatible, collaborative behaviours are likely to occur when goals are similar (Hudson *et al.*, 1999) and thus compatible. The specificity of the setting we are studying leads us to note that an incompatibility between individual organisations’ goals and the shared common goals (the meta-organisation goals) may also occur. These ideas form a basic theoretical framework, presented in figure 3.1, which constitutes the basis for our analysis in subsequent sections.

Figure 3.1 – An IC relational framework



3. The case study

3.1. Methodological note

Since we are studying dynamic processes, about which there is a lack of understanding, in a complex and atypical organisation, the case study is an appropriate

method of research (Mills *et al.*, 2010). Specifically, the case study is a suitable method to develop an understanding of the factors and processes behind IC creation and deterioration on a seaport. On the one hand, we study a contemporary and complex phenomenon within its real-life context (Yin, 2009). On the other hand, the seaport provides us with a unique environment due to its complexity as an organisation composed by other organisations, each of one having their own individual goals and different levels of power, but connected by interdependency relationships. Hence, we developed an in-depth single case study. This type of case study allows to better understand the peculiarities and typical characteristics of the setting under research (Dyer and Wilkins, 1991). Furthermore, we focused on the network of relationships rather than on a specific actor (Joia and Malheiros, 2009). Although we are studying the relationships between several Seaport's members, it is our aim to understand the outcomes of such relationships (in terms of IC) for the whole meta-organisation. Therefore, both dyadic and more complex relationships are analysed in this study.

Data was collected between April 2010 and September 2014. In order to understand what factors are behind the creation and deterioration of IC from a relational point of view, we used multiple sources which included exploratory discussions and interviews with several members of the Port Authority, documentary evidence and also direct observation. Notes were taken in every discussion and interview. Besides, all semi-structured interviews were recorded, with the most important parts being transcribed.

Between 2010 and 2013 we conducted several exploratory discussions and semi-structured interviews with one member of the Port Authority's Board of Directors (MotB). This interviewee gave a fundamental contribution to this study due to the knowledge he had about several important events that occurred or were occurring in the Seaport. We also conducted interviews with an APA's Business Development Manager

(BDM), an APA's IT System Manager (ITsM) and an APA's Responsible for the Environmental Area (RftE). Finally, in 2014 we carried out two more semi-structured interviews in order to precise some issues concerning our illustrations: one with the MotB and the other with the ITsM (with a length of 30 minutes each).

In a first stage (2010 – January 2012) we analysed the empirical context, identifying the types of firms that compose the Seaport and how they relate with each other. During this period we carried out four exploratory discussions and conducted two semi-structured interviews with a MotB. During this stage, this interviewee provided us with information not only about the Seaport and its internal processes but, crucially, about the APA's perception regarding several relationships between Seaport's members. These discussions and interviews had an approximate length of 90 minutes. Along with the literature review, they suggested that members of the Seaport have different goals. They also suggested that although there is a high level of interdependency between several of these members, they sometimes fail to adopt a collaborative behaviour. These meetings allowed us to identify three episodes that, due to their complexity and richness, were deemed appropriate to explore the main factors behind the types of relationships depicted in the framework represented in figure 3.1.

In a second stage (2012-2013) the four additional interviews with this MotB were focused on these three episodes, since he demonstrated a deep and clear knowledge about the particularities of each episode in a longitudinal way. These interviews allowed us to gain a deeper understanding of the reasons for the adoption, by the Seaport's members, of collaborative or conflictive behaviours, and the impact of these behaviours on the Seaport's CIC. We conducted four semi-structured interviews with the MotB (with an approximate length of 75 minutes), in which those specific episodes were a major part of the discussion. These interviews were complemented and triangulated with a semi-

structured interview with a Business Development Manager (BDM) in June 2012, and another two interviews (in June 2012 and February 2013) with an ITsM. The semi-structured interview with the Business Development Manager (BDM) had a length of approximately 2 hours. The interviews with the ITsM had lasted for about 30 minutes (the first one) and 2 hours (the second one). The BDM was selected due to the fact that he had a general knowledge about all the three events we chose to analyse. Besides, he was strongly involved in the Seaport's promotion. The ITsM, who is also a regular collaborator of the "Portuguese Ports Association" portal, provided us with detailed and rich information about not only the technical details of the Seaport's IT System (one of the selected episodes), and also about the main developments that had occurred since its creation.

Documentary evidence and other records were critical for our study. This type of evidence provided us with information regarding the Seaport's collective goals and regarding several members' individual goals. It also provided us with information on the relationships established between APA and other Seaport's members, and those established between some of those other members. Some documents were collected within the APA's headquarters between June and August 2012 and included emails, faxes, contracts, internal memos and other reports. Those documents were publically available due to the fact that APA is a public and state owned organisation. Furthermore, APA had the documents archived in "physical" folders and organised chronologically according to the subject or the Seaport's member, something that was very helpful for our analysis. It allowed us a faster access to relevant documents. Other documents such as the Strategic Plan, sustainability reports or annual reports and accounts were also publically available and could be found online. In particular, the analysis of the Strategic Plan was very important to this study, since this Plan described in exhaustive and systematic fashion the collective goals of the Meta-Organisation under study. This Strategic Plan

stated not only general, but also specific goals for a 10-year frame. When considering the “Union” episode, external records were crucial, allowing us to get important information about the consequences of the labour conflict in terms of CIC. In fact, there was considerable media coverage of this conflict, something that allowed us to better comprehend the sequence of events and their consequences. Finally, the direct observation method was also used in order to get to know how a seaport works in physical terms.

As proposed by Yin (2011), we followed five stages of data analysis: compiling the data, disassembling and reassembling it, and finally interpreting the data and concluding. This process was an iterative one.

3.2. Research site – The Seaport of Aveiro and Aveiro’s Port Authority

A seaport can be seen as a functional element in logistics systems delivering value to shippers and other third parties’ service providers (from moving cargo through that seaport) in the value-driven chain, segmenting their customers in terms of a value proposition, and capturing value for themselves and for the chain in which they are embedded in so doing (Robinson, 2002). Such is the case of the Seaport of Aveiro, which is located in Central Portugal, in an inland lagoon called “Ria de Aveiro” (Aveiro Estuary). It includes seven terminals (including an advanced agribulk terminal) and two specialised intermodal logistics areas, and it is an important seaport in the development of Short Sea Shipping. Within this Seaport, several private actors – shipping agents, terminal operating companies or industrial clients – develop their activities along with public ones, such as the Customs office, the marine police or the labour Union. Although there has been a trend for private investment, Portuguese seaports are owned by the state,

regulated by a public body and managed by port authorities (Barros, 2003): at stake is the landlord form of management, which is the most common in the EU (Verhoeven, 2009). It involves port authorities that act as ‘facilitators’ in transport chains, working together with various stakeholders to identify and address issues affecting logistics performance (Notteboom and Winkelmanns, 2001).

Until 1998 the Aveiro’s Port Authority (APA) was a public body. However, this situation changed in that year and since then APA is a legal company whose sole shareholder is the Portuguese State. According to Marques *et al.* (2011), its role also changed from a regulatory towards a more managerial one, becoming responsible for all actions concerning the Seaport’s economic development. The APA is responsible for the Seaport economic exploration, as well as its preservation and development. The Seaport’s mission is to provide competitive access of goods to regional, national and international markets, promoting the economic development of its region.

In Portugal, port authorities have increasingly gained autonomy and competencies to define seaports’ goals, although it is the Portuguese government that formulates the strategic guidelines that they have to follow. In 2005, the APA developed and approved a Strategic Plan (which was revised in 2008) for the Seaport’s next 10 years, defining three main strategic goals: to expand and enhance the hinterland; to fulfil the potential of capacity in reserve; and to extend the range of the Seaport’s services. Several means to achieve this latter objective was identified: the increase of flexibility and productivity of stevedoring operations; the modernization of administrative and customs’ procedures; and the optimization of the functional organisation of the Seaport, as well as the coordination between the several actors within it.

Thus, consistently with the literature (see above), overall collective goals for the Seaport were defined by the APA. As a Business Development Manager (BDM) put it:

“[The APA] can represent the collective in certain aspects, such as the ones stated in the Strategic Plan”.

3.3. Episode 1: The concession within the Dry Bulk Terminal

Port operators are organisations that load and unload cargo from ships and that may also have other responsibilities such as cargo control or warehousing (Marques *et al.*, 2011). They can enhance maritime logistics by offering quick, responsive, flexible and reliable services at a lower price (Lee and Song, 2010).

In 2008, an operator and the Seaport of Aveiro, represented by its coordinator – APA – entered into a collaborative agreement (a concession contract) whereby the operator was granted a 20 years license to explore a space in the Dry Bulk Terminal. This specific operator was a private organisation belonging to a sub-holding of a major Portuguese Group. That organisation provided services regarding cargo handling, warehousing, distribution and logistics. It had profitability objectives, aiming to provide better quality and more efficient (i.e. cheaper) services to its customers. The acquiring Group’s objective for this operator was to grow through acquisition of new concessions in Portugal and abroad, and also through diversification of its range of services. The operator thus made a big investment not only in tangible assets but also in the development of its IIC, especially by developing a new brand and creating a new business unit. Also, the concession contract itself may be seen as IIC for the operator.

The APA greatly valued this collaboration given its goals of improving the supply of Seaport services and of increasing the Seaport’s competitiveness, as well as its capacity to meet customers’ expectations. Until 2008 there was no operator dealing with agribulk cargo and for the Seaport this was a new business area whose exploration deemed

interesting: the investment increased the Seaport's capacity regarding agribulk goods and overcame important storage limitations. The MotB remembered that this was perceived as an opportunity back then, stating that:

“It is a new variable in terms of value proposition for our customers. We didn't have any facilities with those characteristics”.

This collaboration had positive impacts on IC for both the operator and the Seaport as a whole. Regarding the operator, as already mentioned, this investment was in line with its growth objectives. From the Seaport's perspective, this investment led to the creation of IC through several different ways. The development of a new business within the Seaport required the development of new competencies throughout the Meta-Organisation. In fact, operators are part of a logistics chain, which means that they have to collaborate with other actors within the Seaport. The MotB stressed this fact by stating that:

“There was then a new market segment that started to be handled in a different way (...) and an operator cannot act alone (...). [For example] the operator had to train stevedores specifically for that unit”.

Several actors had to adjust to the new reality and developed their own competences in order to provide a service to this new operator. Knowledge was being transferred within the Seaport in order to increase performance.

CIC had also to be created: the Seaport's external relational capital was boosted due to an improvement of its image. As a result of the operator's investment, the Seaport could now offer a new service. Also, the support of one of the biggest Portuguese corporations (which was behind the operator) and the great amount of investment were, to the MotB:

“A proof of confidence in the Port, which was a positive signal for the Seaports’ reputation (...). The Seaport’s image was clearly reinforced”.

So, this was a ‘win-win’ game: it was of the best interest of the Seaport – represented by the APA – to “sell” the new service, and to stress the role and the competencies of the operator. By doing that, the APA was certainly developing IIC for the operator, but also the Seaport’s CIC. As the MotB put it:

“In my perspective 1+1 is greater than 2 and this leads us to do joint actions with the owners of this brand (...). This project in particular will benefit not only the company but also the Port as a whole (...). The Port is interested in promoting this brand individually”.

This MotB agreed that since 2008 this collaboration resulted in an increase of the ports’ CIC. However, he also considered that, by 2013, Seaport customers’ expectations regarding the use of this new installation were somewhat defrauded. In 2013 the MotB claimed that:

“The project was expected to have a market share much higher than [the one that has been achieved] (...). Customers’ expectations were for the project to be very successful (...). But the lack of success means that the reverse happens. The initial proof of trust also becomes a proof of distrust. The unfolding of events in this case reflects both: creation and deterioration [of reputation]”.

3.4. Episode 2: The IT System

Since 1997 the Seaport of Aveiro has an IT system, named Gespor, which facilitates ship dispatch. Before its implementation, all procedures involved in this

process took a great deal of time and implied several costs. According to the IT System Manager (ITsM):

“Before, all was done on paper: [Seaport’s members] had to deliver those papers in a certain [physical location], they had to use phone or fax (...). A number of these operations (travel, phone calls, ...) are no longer necessary (...) and quickly people realised that there was much to gain”.

Although members, namely the shipping agents, perceived the productive potential and its benefits in terms of costs, on the other hand they were also apprehensive. The same ITsM said that:

“The hardest part was to make them realise that the system contemplated all their needs and the security they had with the procedures they had at the time. The concerns were to ensure that with the same speed with which they did their work, they would continue to do it based on the system and the security they had, and their ‘neighbour’ would not get to know of their secrets”.

However, persuasion by the APA and some ascendancy of this latter organisation towards those actors led to the widespread adoption of the new procedures.

Since its inception, this system has frequently been updated in order to dematerialise documents and improve the Seaport’s efficiency. For instance, in October 2005, Gespor’s technological platforms were updated and new functions were introduced, allowing for planning of operations and electronic exchange of operational data in a web environment. This update also allowed for the alignment of processes, for information exchange and for the promotion of collective goals. These new functions were also a consequence of a project started in 2002 by the Portuguese ports’ association which aimed to simplify, normalise and harmonise all the Portuguese ports’ procedures. In 2009,

Aveiro's IT system (then renamed JUP for '*Janela Única Portuária*'), already involved the whole port community, and all Seaport actors could collect and insert information from/in it.

Among the new procedures, there was a critical one regarding cargo control and involving another public authority – Customs, whose activity is “*much more critical regarding goods than any other from other authorities*” (ITsM). This new procedure was the ‘electronic cargo manifest’, which is a document needed to dispatch the cargo, and which has to be approved by the Customs. Despite all the efforts to increase efficiency at the administrative level, such approvals were still issued on paper. With the new procedure, the APA and other port authorities intended to decrease bureaucracy, the number of documents exchanged and the time consumed to approve a cargo. Indeed, several actors and even customers were already complaining about the time spent in administrative issues. Already in the 2005's Strategic Plan, the APA proposed an improvement in the supply of Seaport services and an increase in Seaport performance through better coordination between several Seaport's actors, and also through the modernisation of administrative procedures, including Customs' ones. However, and according to the APA's ITsM:

“Customs evolved in a different way (...) they did not want to leave the stamps and the embossed presses, and thus developed their systems in parallel with the Port management systems (...).”

The main problem was that, in 2005, Customs had their own culture and their own procedures, and they preferred to keep using them: this meant they developed a resistance to change, namely regarding cargo dispatch. Most importantly, according to the BDM, there was a:

"[Sense of] risk of loss of reliability of this new computer system regarding [Customs'] objectives".

Customs considered that integration of the cargo manifest within the Gespor system could raise security issues. And, since Customs is a public authority, the APA could not impose its system on them:

"Customs is a local authority and many of its directors still felt the need to have physical documents with signatures (...). Even if they received instructions from the central organism, they continued to think that local authorities should require these documents for security reasons" (the ITsM).

This fact led to an impasse that lasted for several years. By refusing to adopt the new procedure, Customs were negatively impacting the whole Seaport. As claimed by the ITsM:

"The Seaport as a whole was being negatively affected because procedures could be quicker and the Seaport more efficient (...). [Also] this was a period when the entire port community was together behind the system, and one very important member was not aligned with them".

Through time, there were negotiations regarding this matter, in which APA tried to persuade Customs' directors of the benefits of the new procedures. However, APA had to make some concessions. According to the MotB:

"The IT system had to be adapted in order for Customs to adhere to it (...). There was a learning stage in which paper continued to be used. This adaptation lasted for two or three years in order to please Customs. If they had adhered right in the beginning, the official acceptance would be in 2005 (...). [Eventually], Customs went from a position of resistance to a position of cooperation and acceptance of the system.

Why? Because it was created a working group with elements of Customs, port authorities and shipping agents in order to satisfy the needs of Customs”.

During this period there was an underexploited investment in CIC. In this case, the CIA was not adequately exploited by virtue of the development of a related CIL. Finally, in 2010, Customs conformed to the new procedures. Its directors were now conscious of the absurdity of the situation. According to the ITsM:

“[Customs] realised that the fact that they were receiving documents and then introducing information into their own system was bringing about immense productivity issues (...) on the one hand (Customs) demand the paper because it has legal validity, but on the other hand they spend hours launching data when agents had already done so into [Gespor/JUP]”.

The 2005 update also led to some resistance from the part of shipping agents. These actors were not willing to share knowledge, since they were afraid that their competitors could have access to sensitive information on their own customers. The same ITsM said that:

“They felt that they were sending information to a network [they did not control] (...). The initial suspicions returned”.

However, and despite the complaints voiced through Shipping Agents’ National Association, these actors kept using the platform. According to the MotB:

“APA had a mandatory power over the shipping agents when approaching them individually”.

This power to impose the adoption of the new system did not prevent the APA from attempting to persuade shipping agents of the advantages of the new system:

meetings, presentations, exchanges within the Port Community Association are examples of the efforts conducted by the APA to consolidate those actors' acceptance of the update. By the time of our visits, such consolidation had been achieved.

3.5. Episode 3: The Union and the labour problems in the Seaport of Aveiro

Port stevedores are important stakeholders that can be organised in Dockers pools, i.e. organisations responsible for managing stevedores' workforce. At the time of this study about 85% of Aveiro's port stevedores belonged to a Dockers pool named ETP (for '*Empresa de Trabalho Temporário*') which was a private non-profit association created in 1993 to provide manpower for the Seaport. Its management was comprised of four independent organisations: three private operators and a representative of stevedores' Union. The operators resort to the Dockers Pool when they need workforce to perform their tasks in the Seaport. For that, they pay hourly fees to ETP.

In 2009, in a context of economic crisis in Portugal, ETP was in a poor economic situation: it was at a loss and in a situation of insolvency. Due to these problems, ETP could not pay the full wages to its 64 employees. Indeed, the Portuguese economic crisis was an important factor influencing this problem, meaning less job placement (including temporary work) and thus less income. To solve this situation, ETP's management proposed a decrease in the stevedores' wages, something that was not accepted by the stevedores' Union. As a consequence, a conflict emerged between the Union and the operators, who exchanged accusations, namely through the press ⁹. On the one hand, a board member of the Union claimed that the Dockers Pool was ruinously managed,

⁹ Expresso, 12 Agosto 2009

arguing that ETP did not charged the real value that should be charged for the concession of the workers. On the other hand, the president of the Association of Stevedores Companies in the Seaport of Aveiro (AEEPA for '*Associação das Empresas de Estiva do Porto de Aveiro*') replied by arguing that the Union took part in all decisions. These different ETP owners had different goals and behaved in a conflictive way, with serious consequences for the whole Seaport. After several meetings between Dockers Pool's members, the National Regulator and the Port Authority, no consensus was achieved and the stevedores (represented by its Union) went on a strike that halted the Seaport of Aveiro for a period of three weeks.

In December 2011, ETP declared its insolvency triggering another conflict. The problems were the same as in 2009. According to the APA's Board President ¹⁰ "ETP does not have sufficient revenues to cover the expenses. In 2009 there was already a strike due to these problems". However, in 2011, ETP's insolvency was seen as part of a wider problem. At this time, there was an ongoing port labour reform - which also involved Dockers Pools' laws and aimed to reduce expenses in at least 20% and also to decrease the prices payable by companies using Portuguese ports. This reform was one of the Portuguese government priorities, and it was demanded by the Troika's memorandum (Portugal was under a financial bailout since 2011). According to the vice president of the Confederation of Maritime and Port Unions "the intention behind this initiative from stevedore associations and enterprises was the deregulation and precariousness of all the dock work in the Port of Aveiro". He argued that "after the insolvency petition, they [port operators] contacted temporary workers to ensure the work" ¹¹. With the insolvency of

¹⁰ Diário Económico, 15 December 2011

¹¹ Exame Expresso, 10 January 2012

ETP, stevedores faced a sombre perspective: they were likely to face daily underpaid contracts and lose their job stability.

On the 24th December 2011, the Workers' Union of the Seaport of Aveiro went on strike against the presence in the Seaport of workers not related to the Seaport's activity. The APA's Board President commented to the press that the strike would "only contribute to worsen the situation of the Port"¹². He also claimed that this strike would jeopardise the future of four exporting companies located within the Seaport. Even the vice president of the Confederation of Maritime and Port Unions considered that the impact of the stoppage would be "more serious" on exports: "[the stoppage] will affect the deadlines and the confidence of customers who may switch to another port making us [Portugal] lose competitiveness"¹³.

By January 2012, this problem spread out to other Portuguese ports that also went on strike in solidarity with Aveiro's stevedores, demanding the suspension or withdrawal of ETP's insolvency process. It should also be noted that by this time the Portuguese government wanted to change Dockers Pool laws, something that was creating a tense environment in the sector. Throughout 2012, no consensus was reached regarding the reform of port labour, and there were several paralyses in the Seaport's operations, involving different actors. Indeed, in the port sector there were 7 strikes in 2011 representing a loss of 145 days of work, and 14 strikes in 2012 (until October) representing a loss of 295 days of work in most Portuguese seaports, including Aveiro¹⁴.

In November 2012 an insolvency plan for the recovery of ETP was approved, with the two remaining operators voting against it. As a consequence, ETP's was now

¹² Ionline, 24 December 2011

¹³ Dinheiro Vivo, 9 January 2012

¹⁴ Ionline, 27 November 2012

composed of an insolvency administrator and also the president of the Seaport of Aveiro's Labor Union. The two opposing operators refused to be part of that commission, and in 2013 they created a new Dockers Pool (named '*GPA – Empresa de Trabalho Portuário de Aveiro* ') that became ETP's competitor.

3.6. Theory Development

The episodes described above lend support to a basic proposition derived from the literature: collaboration occurs in situations of compatibility of goals and it may lead to the creation of CIC. Episode 1 "the concession within the Dry Bulk Terminal" depicts a case where an operator collaborated with APA as a result of a dyadic compatibility of goals between both parts. The operator made a large investment in order to follow its own economic goals: acquiring the right to conduct new operations, thus diversifying its services. These goals were compatible with the APA's ones, as reflected in its Strategic Plan: to increase competitiveness by improving the range and quality of Seaport's services. A similar situation could be found in episode 2 "the IT System": despite initial concerns regarding the input of data through a new system, the shipping agents perceived the advantages of collaborating with the APA when the IT system was introduced. For instance, several operations such as car travel, phone calls or faxes ceased to exist. As the ITsM put it:

"At the time (...) when we presented the software what we had to ensure to shipping agents and Port operators was that, namely, they would save [money]. That was more or less obvious".

The effects of collaboration are portrayed in both illustrations 1 and 2, and are in line with Nooteboom's (2004) arguments about the importance of collaboration in order

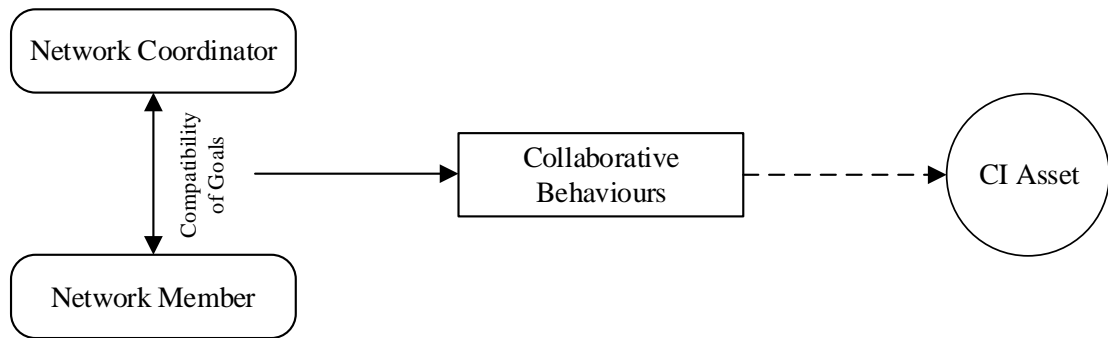
to attain collective goals (in this case, common to the Seaport and other members such as the Operator or the Shipping Agents). Shared interests were behind those collaborative behaviours (see McNamara, 2012). In episode 1, both parts acted synergistically in order to promote not only the new Business Unit but also the Seaport. The marketing of a port can be a ‘collective good’ (de Langen, 2004) and APA was involved in promoting (along with the port community) the brand ‘Porto de Aveiro’. Therefore, it was of the best interest of the Seaport to “sell” the new service. As the MotB noted:

“Presentations of the Seaport promoted by the Port Authority (...) started to include a presentation of the operator’s new brand in order to create awareness towards the Port brand (...). [On the other hand], when [the operator] sell[s himself] to [its] customers, [he] also sell[s] the Seaport”.

By promoting the new service, the Seaport was increasing its “brand capital”, which, according to Zabala *et al.* (2005) can be considered an important measure of success. In episode 2, collaboration led to the development of new and better procedures. Moreover, episode 1 provided evidence regarding the importance of knowledge transfer to develop IC (see Visser, 2009; Pöyhönen and Smedlund, 2004; Joia and Malheiros, 2009; Lee and Song, 2010).

Therefore, and as represented in figure 3.2, these cases suggest that a compatibility of goals between a seaport’s member and the port authority (in a dyadic way) promoted a collaboration between the member and APA, thus leading to the creation of CIC.

Figure 3.2 – The effects of a dyadic compatibility of goals over CIC



However, a somewhat opposite observation surfaced in our case study: the emergence of a CIL is a possibility *even* when there is a dyadic relationship of collaboration between both actors. As we saw in episode 1, the non-fulfilment, by the Seaport, of customers’ expectations regarding the level of service (they expected a much higher level of service due to the dimension of the project) led to a depreciation of the relational capital that was developed since 2008. This is in line with IL’s definition proposed by Garcia-Parra *et al.* (2009). In general, IC creation and deterioration in a meta-organisation are complex phenomena. Issues such as economic restrictions, lack of competences or simply wrong decisions may lead to negative outcomes even in a context of compatibility of goals and collaboration. The latter is probably a necessary condition for the emergence of intellectual assets and for the avoidance of intellectual liabilities, but it is not a sufficient condition for those outcomes: hence the dashed arrow linking ‘Collaborative Behaviours’ and ‘CI asset’ in figure 3.2.

A contrario, and considering the different organisations working within the Seaport boundaries as composing a port supply chain – i.e. “a system of people, activities, information, and resources involved in creating a product and then moving it to the customer” (Ketchen *et al.*, 2008, p. 235) – several instances of incompatibility of goals

are likely to emerge (see, for instance, Ketchen and Hult, 2007). Some actors may try to benefit themselves, such as by free-riding, holding up or leakaging, even if this damages the whole chain in terms of speed, quality, cost and flexibility (Ketchen and Hult, 2007).

Episodes 2 and 3 provide us with evidence on the impact that an incompatibility of goals may have on the Seaport's CIC. Following a stakeholder approach, we see the seaport as a context where stakeholders' behaviours are driven by their own interests but also where collaboration between them is needed in order to create value for the seaport (Notteboom and Winkelmans, 2002). Indeed, stakeholders can affect each other (Costa and Cunha, 2010). De Langen (2006) considers that besides having a common interest in the seaport which is its economic development, members might as well pursue their own goals.

These episodes portray instances where members try to attain their own goals, even at the expense of the collective, similar to what is referred by Notteboom and Winkelmans (2002). They also highlight the moderating effect that *power* may have in accommodating non-collaborative or conflictive behaviours. In fact, the concept of power has been neglected in literature regarding IC in networks, but it proved decisive in the analysis of our case study. Defining power has been troublesome (Hardy, 1996; Clegg *et al.*, 2006) with several authors proposing different definitions. In this essay we adopt a conceptualisation of power that approaches it in neutral terms (Hardy, 1996), one which views power with its negative ('power over') and positive ('power to') dimensions (Hardy, 1996; Clegg *et al.*, 2006). Hence, we have adopted Hardy's (1996, p. S3) definition of power as "force that affects outcomes".

Within a seaport we can find several stakeholders with different levels of power, that can evolve from seaport to seaport or over time (de Langen, 2006). Power is dispersed through its members via the development of dependency relations, i.e. power is

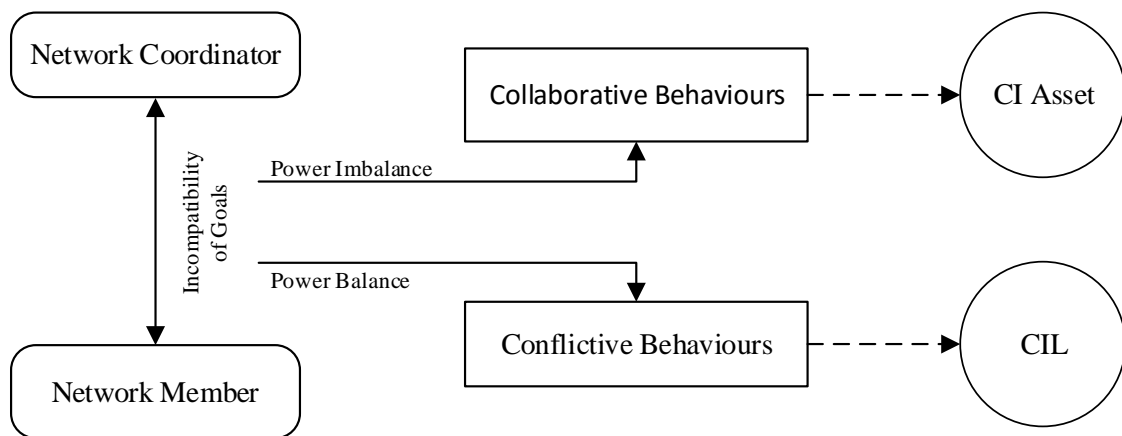
distributed according to a path of interdependencies regarding members' resources and activities. There is power imbalance when there are differences on dependencies between actors (Khoja *et al.*, 2011). Assessing these power imbalances between stakeholders is crucial to understand a port community (Olivier and Slack, 2006). "Power imbalance" is thus an important variable to explain how and why a network takes place and thus issues of power in a seaport should not be neglected when adopting a relational point of view (Olivier and Slack, 2006).

Episode 2 "The IT System" portrays two situations regarding the 2005 update: a first one, involving the Customs authority and the 'electronic cargo manifest' where an incompatibility of goals led to a lack of collaboration, with negative impacts on IC. APA wanted to include this procedure in its IT system (Gespor) while Customs, which had their own system, were renitent to turn a physical procedure (the use of paper and white stamps) into an electronic one, namely due to security reasons. Crucially, in this situation the APA did not have the power to enforce collaboration. The Customs were an authority, just like APA, and APA could not impose the system to them. Customs had the capacity to restrain choices and actions of the APA. In this case, there was a balance in terms of power due to the high degree of independency of each actor (Customs and APA), something that contributed to the emergence of a CIL. The second situation is the one wherein the shipping agents collaborated with the Seaport, although some resistance emerged during the process. In this case a collective liability did not arise. This was to a great extent due to the power imbalance between APA and those agents: despite the shipping agents' early reluctance to collaborate, the APA had mandatory power over them, the updates were accepted and CIC was created.

To sum up, when an incompatibility of goals between the network coordinator and another member prevails, and there is a power balance between them, a CIL is likely to

emerge; when both parties' goals are incompatible, but the network coordinator performs a power exercise over that member, a Collective Intellectual Asset (CIA) tends to develop. This is depicted in figure 3.3.

Figure 3.3 – The effects of a dyadic incompatibility of goals over CIC



It should be noted that the view of power implied in this discussion, and in the above definitions, is not necessarily a negative one of forcing the others to do what they otherwise would not do. Such 'negative' power was, for a time at least, important in the case of the shipping agents. But it was not sufficient in the case of Customs, wherein the APA had to persuade its counterpart of the mutual positive effects of the changes being proposed: i.e., a more positive or facilitative use of power. Actually, even in the shipping agents case, one in which enforcement power was available, the APA sought to deploy more facilitative dimensions of power by persuading those agents of the advantages of changes being proposed. In general, thus, the APA showed a preference for the exercise of positive power over negative one: this would arguably be expected in the context of a network in which the creation of an overall environment, in a sense a 'culture', of

collaboration constitutes an important objective for the network coordinator. This is in line with Hardy (1996), who argues that although traditionally the concept of power has a negative connotation, it can also be approached with a more positive stance, where its exercise allows for the achievement of outcomes by promoting collaboration and preventing the emergence of conflict.

While episodes 1 and 2 reveal situations where dyadic relationships (collaborative or conflictive) between a member and APA may affect (positively or negatively) the CIC, episode 3 – “the Union and the labour problems in the Seaport of Aveiro” – reveals a much more complex situation. Here, contextual factors such as the bad economic situation of ETP and its later insolvency process, or the port labour reform, triggered behavioural conflicts between two stakeholders: the port operators and the Union, with a highly negative impact on the whole Seaport. For example, the operators proposed a decrease in the stevedores’ wages and the hiring of temporary workers, in order to reduce costs. This clashed with the interests of the Union. Indeed, and although they were co-owners of the same organisation, the Operators and the Union had different and often conflictive goals. The conflict between these members arose as a consequence of an incompatibility of goals. Examples of operators’ goals are cost reduction, good infrastructures, and low interference with the logistics chain (e.g. safety, security, product quality regulation and Customs procedures). On their hand, stevedores (represented by the Union) aim to maximise employment levels, job security, career opportunities, and wages (de Langen, 2006; Notteboom and Winkelmanns, 2002).

As we saw, labour unrest emerged in 2009 and persisted throughout 2011 and 2012, though other motives were added up, namely the declaration of ETP’s insolvency and the port labour reform, and several strikes and paralyses took place. From a collective point of view, these behaviours were misaligned with several general goals of the Seaport,

such as increasing flexibility and productivity of stevedoring operations, optimising the functional organisation of Seaport operations or optimising the coordination between the various Seaport's actors. They led to immediate losses: according to APA's annual reporting, the 3 weeks strike (between 3 and 23 August 2009) resulted in a diversion of cargo to other ports.

Perhaps more importantly from the meta-organisation's point of view, the conflicts between members caused the depreciation of several intangible assets, such as the established procedures and the Seaport's reputation (which is in line with authors such as Caddy, 2000; Stam, 2009; Garcia-Parra *et al.*, 2009; Giuliani, 2013). Indeed, all those conflicts negatively affected the Seaport image and its relationships with several other entities. For example, after the strike of January 2012 and according to the executive director of the shipping agents association (in an interview to a Portuguese newspaper ¹⁵) there were not only direct losses, but also "indescribable losses" from "all other indirect operations" that would "spread out throughout the economy". He added that "the worst is that a seaport that recurrently has strikes loses ships and can't convince the ship-owners to use Portugal as a scale". The MotB added that:

"The fact that ETP is insolvent destroys intellectual capital for the collective. Customers are much more wary of doing business with the Port of Aveiro when one of the key players is in a major crisis process".

The image Portuguese ports (including Aveiro) were giving was also the main worry for the president of IPTM (*'Instituto Português e dos Transportes Marítimos'*, i.e.,

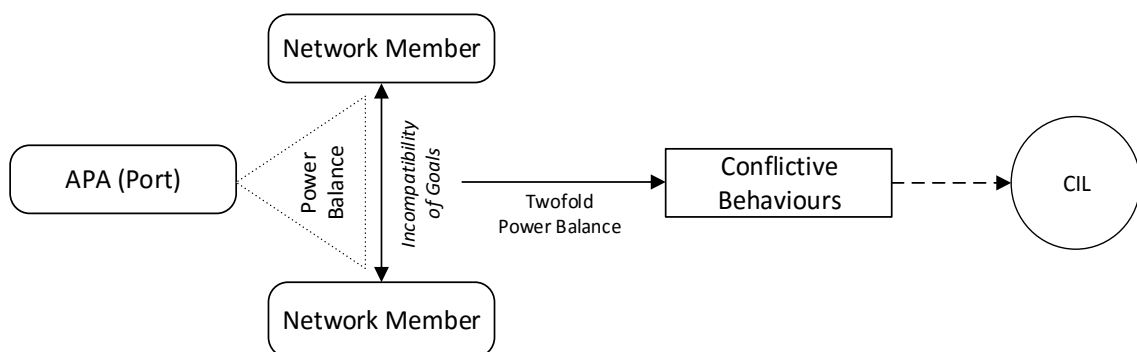
¹⁵ Ionline, 10 January 2012

the Institute for Ports and Maritime Transport), according to an interview given in October 2012 to another newspaper ¹⁶.

One can thus argue that the actions taken by the members to defend their individual goals were misaligned with the goals of the Seaport. In spite of APA's efforts to balance these different goals, which is in line with Winkler's (2006) argument that a network coordinator should act as an integrating mechanism, conflict prevailed. Moreover, the intervening members – including the APA – did not possess enough power to end a conflict that endured for several years with a severe impact on the Seaport's CIC, especially given the deterioration of the Seaport's relational capital.

Hence, our case suggests that in networking relationships, a CIL is likely to endure as a consequence of conflictive behaviours of members that possess different goals but the same level of power, with the network coordinator also lacking power to make those goals compatible. We call this a 'twofold power balance', as depicted in figure 3.4.

Figure 3.4 – The effects of a network incompatibility of goals over CIC

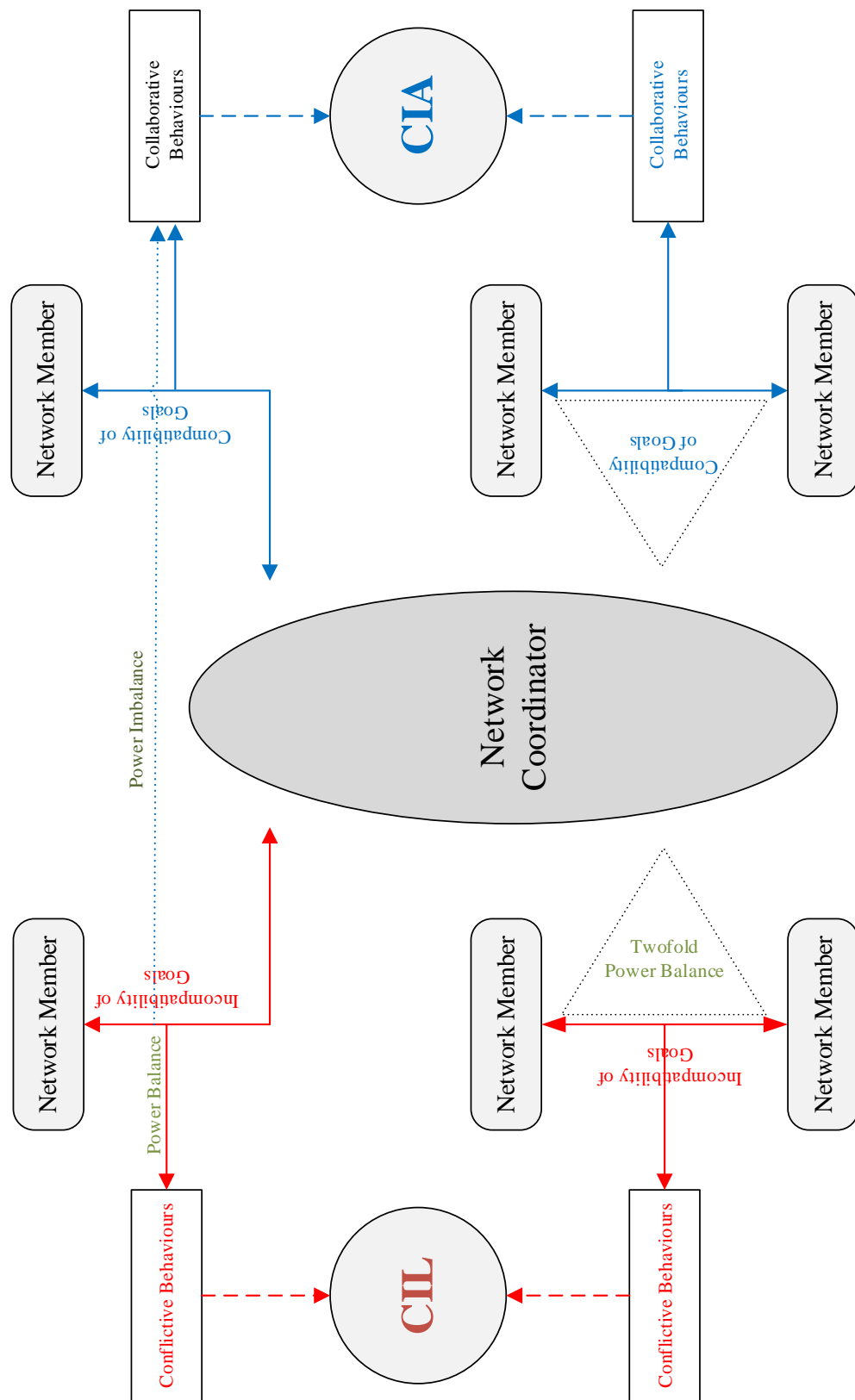


¹⁶ Jornal de Negócios, 2 October 2012

4. Summary and Conclusions

This essay explored the main factors behind IC creation/deterioration in meta-organisations. This was done through a case study conducted in a specific type of meta-organisation: a seaport. Literature has suggested that, in such a context, one will find two levels of interrelated IC: the collective and the individual (see chapter 2). It has also suggested that the creation or deterioration of CIC results from the types of relationships occurring between organisations composing the meta-organisation. Hence, the case study provided us with evidence to develop our initial framework, where we depicted CIC increase as a consequence of collaboration and CIC decrease as a consequence of conflict. Furthermore, in a seaport context, there is a high level of interdependency between its actors, which have their own goals and different levels of powers. Based on these ideas, and drawing on the concepts of collaboration, conflict and power, we developed the theoretical framework portrayed in figure 3.5.

Figure 3.5 – Meta-organisation’s CIC creation/deterioration framework



This framework summarises the insights extracted from our case study:

- (i) CIAs are likely to be created (through collaboration) when there is a compatibility of goals between the meta-organisation and a member in a dyadic way.
- (ii) CILs may emerge when there is an incompatibility of goals between the meta-organisation and a member and a situation of power balance between them, leading to conflictive behaviour. On the other hand, and although goals might be incompatible, the exercise of power by the network coordinator may promote a collaborative behaviour and thus lead to the creation of CIC.
- (iii) In more complex (networking) relationships, CILs are likely to emerge when, as a consequence of incompatible goals, members adopt conflictive behaviours and there is a 'twofold' power balance between the involved members, i.e., involved members do not have the capability to influence each other *and* the network coordinator does not have the power to induce collaborative behaviours in line with the meta-organisation's goals.
- (iv) In such more complex (networking) relationships, CIC may be created when members collaborate to achieve the network's goals. Most IC literature stresses the importance of collaboration to the development of IC for the whole organisation (e.g. Sporleder and Peterson, 2003; Joia and Malheiros, 2009; Forsman and Solitander, 2003; Lee and Song, 2010; Seleim and Khalil, 2011). Likewise, we argue that collaboration to achieve the meta-organisations' goals promotes the creation of CIC.

In general terms, this essay contributes to develop our comprehension about the factors that affect seaports' and, more generally, meta-organisations' CIC. More specifically, we sought to understand how CIAs are developed or CILs emerge in such a context. In the case of a seaport, actors have their own interests, different sources of influence, and different levels of power (de Langen, 2006). Hence, the understanding of the ways through which CIC is created or deteriorated in a meta-organisation should always hinge on the understanding of these factors.

This essay is based on a case study conducted in a specific context. Hence, it is not without limitations. Generalisation of this research should only be conducted in a theoretically framed perspective. Also, we did not address neither cases where conflictive behaviour between seaport's members could lead to CIAs nor the negative consequences for the seaports' CIC that, in certain occasions, may result from the collaboration between its members. In this research we assume that members' collaborative behaviours are aligned with the seaport's goals.

Our study points out some possible opportunities for future research. One such opportunity concerns CIC management in a meta-organisational context. Specifically, it might be worth further researching how a network coordinator (such as a port authority) manages the complex relations of interest and power to develop collaboration and mitigate conflict, thus developing collective intellectual assets and/or avoiding ILs that may emerge for the whole meta-organisation. Also, it would be interesting to investigate the impact of collective policies (aiming at achieve the meta-organisation's goals) on the individual IC of the various actors: in fact, in this essay we specifically focused on impacts on the seaport's goals, as stated in the Port Authority's Strategic Plan, and also on the seaport's CIC, but we did not analysed individual impacts. Further research may also analyse instances of collusion between members, and its impact on the meta-

organization's CIC. Finally, future research should be conducted in other meta-organisations possessing similar characteristics, namely those that include a public network coordinator.

Chapter 4 – Intellectual Capital Management and Power Mobilisation in a Meta-Organisation

Abstract

In this essay we discuss how a network coordinator manages the Collective Intellectual Capital (CIC) of a meta-organisation, in order to promote its creation and prevent its deterioration. Several gaps in Intellectual Capital (IC) literature are thus addressed. IC management has been focused on individual firms rather than on ‘meso’ or ‘macro’ level units, such as networks. Also, there is a paucity on IC literature regarding the management of different dimensions of power and its effects over IC creation.

With that purpose we conducted a case study in a seaport, which we conceptualise as a meta-organisation. The seaport provides us with a unique environment due to its complexity as an “organisation” composed by several organisations connected by interdependency relationships. Collaboration between members is, thus, of utmost importance to improve the performance of the whole seaport. However, a seaport is also a setting where actors may possess different goals and different levels of power, which can affect the seaport’s CIC either in positive or negative ways. Consequently, coordination is needed for those dependencies to be managed effectively and the role of a network coordinator – the port authority – is crucial to orient members’ behaviours towards the whole seaport’s goals, which is a potentially complex task.

This essay focus on the actions taken by the port authority to develop the seaport’s CIC. We use a lens of analysis based on Hardy’s (1996) framework of power. Evidence collected from several illustrations suggests that the management of actors’ collaboration by the network coordinator is a fundamental task when it aims to develop CIC. Hence, mobilisation of different dimensions of power – in both coercive and non-coercive ways – is needed to promote a higher level of collaboration. Indeed, by mobilising non-coercive dimensions of power, the network coordinator can foster a sense of community within the meta-organisation, grounded in a trust based collective culture that can potentiate collaboration and thus allow the attainment of a more ‘sustainable’ type of CIC. Findings can have very important strategic and managerial implications, namely to provide network coordinators with a better understanding of the consequences of using different and interrelated dimensions of power in order to achieve the meta-organisation’s goals and enhance its performance.

1. Introduction

IC is considered as a crucial factor for the attainment of organisational success (Lu *et al.*, 2014) and its management is of the utmost importance in a knowledge-based economy, being considered as the main driver of organisation's value creation (Chang *et al.*, 2008; Lu *et al.*, 2014). Academic discussion has been stressing the strategic importance of leveraging and managing Intellectual Capital (IC) for improving organisational performance (Schiuma and Lerro, 2008). IC management refers to different activities in identifying, measuring, controlling and developing intangible resources in a business (Kujansivu, 2008) and organisations that manage their IC are better able to respond to unanticipated economic and market changes (Tayles *et al.*, 2007).

Although most research on IC addresses individual organisations (Lin and Edvinsson, 2011; Tan *et al.*, 2008), there has been a growth of literature regarding the study of IC in 'meso' and macro-level units where the role of knowledge resources as source of regional and local development dynamics has been stressed (Pöyhönen and Smedlund, 2004). Despite this trend, we consider that there is still a gap in the literature when referring to certain contexts, such as seaports. A seaport can be characterised as a complex, multi-functional organisation formed by several other organisations, collaborating to provide a common service. Due to its own organisational specificities, and in line with authors like Gulati *et al.* (2012), we conceptualise the seaport as a meta-organisation (see also chapter 1). In such a context, it is crucial that organisations rely on the IC of others, and collaborate, in order for sustainable competitive advantages to be built (Marti, 2004).

However, collaboration to achieve collective goals may not (always) develop spontaneously and thus leader organisations can play a crucial role (de Langen, 2004; de Langen, 2006), since they attempt to orient members' behaviours towards the whole

community's needs and interests (Provan *et al.*, 2007). In seaports, such leader organisations are usually the Port Authorities (PAs), whose role is thus crucial in the management of the seaport's Collective IC (CIC). This management is potentially complex, given the likelihood of incompatibility of goals in some situations and also the power balances/imbbalances between seaport actors. Grounded on the literature review and on a case study, in this essay we explore how a PA manages the CIC of a seaport. In order to develop the seaport's CIC, the PA has to make collective investments in IC, but also has to promote collaboration between members and prevent situations of conflict.

The essay proceeds, in section 2, with a brief exploration of key concepts of the study: IC, its management and meta-organisations. Then, in section 3, we approach the particular issue of the management of IC in the context of seaports. To do so, we start by defining the concept of, and highlighting the importance of, collaboration in such a context. We then identify the role of the PA and explore the concept of power as key in the way a coordinator manages IC in the seaport. In section 4 we describe and analyse the case study of a specific seaport – the Seaport of Aveiro, in Portugal. Our strategy is to present a set of events that enable us to explain how the PA manages IC in the Seaport: this allows us to develop a theoretical framework that is proposed as a basis for future research on this subject.

2. IC management and meta-organisations

In a knowledge driven economy, where knowledge creation and exchange is crucial, the most important assets of many organisations tend to be intangible and thus IC should be regarded as a crucial and distinctive element for an organisation to create value (Roos *et al.*, 2005; Tayles *et al.*, 2007; Labra and Sánchez, 2013). Managers have been

faced with new demands that underline the importance of IC management (Tayles *et al.*, 2007), which we define, in line with Roos *et al.* (2005, p. 42), as “the deployment and management of intellectual capital resources and their transformations (into other intellectual capital resources or into traditional economic resources) to maximize the present value of the organization’s value creation in the eyes of its stakeholders”.

An adequate assessment and management of IC carries important advantages for organisations, namely the development of new business models, the improvement of organisational performance and value creation dynamics, the development of knowledge to support the growth of those organisations’ competencies, and the supporting of their governance (Schiuma and Lerro, 2008). IC management models have been developed, allowing for the identification, measurement, management and spread of knowledge (Ramírez *et al.*, 2007; Tan *et al.*, 2008). Several of them consider strategy as the main reference, focusing on the management of IC inputs – human, structural and relational – in order to improve the outputs (Marti, 2004; Ramírez *et al.*, 2007). Human capital refers to employees’ individual knowledge, attributes, attitudes and abilities; structural capital includes systems and networks, cultures and values, and elements of intellectual property; relational capital refers to the relationships with the organisation’s stakeholders (Cañibano *et al.*, 2002; Habersam and Piber, 2003; Roslender and Fincham, 2001; Jacobsen *et al.*, 2005).

Most IC management studies focus on value creation regarding individual firms, even though interest for the study of IC in ‘meso’ and macro-level units such as nations, regions, clusters or local production systems has been growing (Pöyhönen and Smedlund, 2004). Indeed, competitiveness and productivity at these levels may be improved through intangible assets and through the adaptation of firms’ business models to those wider settings (Lin and Edvinsson, 2011). Despite this new trend, we consider that there is a

gap in IC literature regarding IC management in network contexts, which is perhaps striking, given that, according to authors such as Pöyhönen and Smedlund (2004), most knowledge is developed in such settings. Indeed, knowledge can be developed within or between organisations (Song and Lee, 2012). Other authors note that the adoption of a network level of analysis is especially lacking (Provan *et al.*, 2007).

Managing IC in such contexts can reveal itself very complex, especially when the network can be conceptualised as a meta-organisation (see chapter 1). A meta-organisation can be defined in simple terms as an organisation formed by several individual organisations. By working in collaboration with each other as a single team and in a coordinated way, these several organisations can maximise their own performance, as well as the performance of the whole system (Lee and Song, 2010). Collaboration between them facilitates mutual learning and leads to the production and stabilisation of routines by putting members' knowledge into action, i.e. by creating IC (Pöyhönen and Smedlund, 2004; Lee and Song, 2010). However, network performance (including IC creation) may be limited due to a mix of shared and also firm-level goals, values and experiences (Ketchen and Hult, 2007), with value propositions being developed at both individual and network levels (Ackermann and Eden, 2011). At stake is a coalition of actors following their own interests, where sometimes these actors may choose to act in order to benefit themselves rather than the whole (Ackermann and Eden, 2011). Furthermore, besides having their own interests, these actors also have different sources of influence and different levels of power (de Langen, 2006). According to their degree of power, they may support (or hinder) the meta-organisation's strategy (Ackermann and Eden, 2011). Finally, their positions may change over time thus increasing the complexity of the relationships they establish (Costa and Cunha, 2010).

Hence, within a meta-organisational context, two different types of IC coexist and are interrelated: the individual IC (IIC) of each member and the CIC of the whole. The creation or destruction of IC at one level of analysis does not imply the same effect at the other level (see chapter 2). According to this rationale, the whole (CIC) is different from the sum of its parts. The CIC (at the meta-organisational level) emerges from a process where knowledge at the member level interacts with the environment (Nielsen and Dane-Nielsen, 2010). As long as we are aware, the extant literature does not refer the development of a management model that integrates both levels of analysis in order to assess how CIC is managed in this type of setting.

3. IC and its management in seaports

A seaport is an example of a meta-organisation. Seaports are interesting examples of territorial economic systems encompassing a complex network of activities (Degrassi, 2001; Alderton, 2005). Several interdependent organisations engage in activities that are likely to increase the seaport's value (Roh *et al.*, 2007). Seaports are formed by public and private organisations, cooperating as a team in order to provide a competitive collective service (Lee and Song, 2010; de Langen, 2004). A seaport can be described as a complex, multi-functional and multi-institutional organisation where actors are connected with each other as suppliers or buyers, providing a maritime logistics service as a coordinated single team in order to create higher value to the final customer/user (Lee and Song, 2010; Bichou and Gray, 2005). Customer satisfaction and loyalty are affected by the logistic capabilities and thus by the quality of the service provided by the entire network (Wu and Chou, 2007). Hence, working together in a cooperative manner can lead maritime operators to a maximisation of the value of the system, fulfilling customer needs

(Lee and Song, 2010). The higher is the customers' satisfaction, the higher is the whole system's value (Song and Lee, 2012).

Seaports should thus be flexible, responsive, adaptable, and act as knowledge centres, distributing information to all the players that participate in its activities in order to evolve from logistics distribution centres (third generation seaports) to transport solution providers (fourth generation), something that requires an efficient application of knowledge (Marlow and Casaca, 2003). Seaports should make the best use of their available tangible resources but also of the intangible ones (which are hard-to-imitate) since their environment is a knowledge driven one (Marlow and Casaca, 2003).

Knowledge is one of the assets whose growth is higher when it is shared and thus competitiveness at a 'meso' or 'macro' levels may well depend on the individual organisations' capacity to transfer, create and use knowledge, i.e. IC (Tan *et al.*, 2008; Pöyhönen and Smedlund, 2004). By operating in a meta-organisational culture that transcends the firm's cultures, actors in a seaport should be able to exchange knowledge in an easier fashion (Rao, 1996). The fact that these actors operate under similar regional conditions and contingencies, due to geographic proximity, can be an important factor to facilitate learning interactions. This is so at several levels: the transfer of the tacit knowledge embedded in people, their know-how, skills, practice, and experience, being captured by socialisation (Forsman and Solitander, 2003; Hall and Jacobs, 2010; Pechlaner and Bachinger, 2010; Marti, 2004; Sporleder and Peterson, 2003). When organisations share and co-develop resources and capacities, building long-term resources, they can co-evolve, thus increasing the possibility of obtaining benefits (such as IC) associated with the relationship (Joia and Malheiros, 2009). By exchanging knowledge, seaport's members can improve their own efficiency but also the performance of the whole seaport (Lee and Song, 2010). Indeed, from a meta-organisational stance,

this might promote value creation and a sustainable competitive advantage towards other ports.

3.1. Collaboration

According to the collective benefits view, the capital of a collective results from a cohesive structure which helps to achieve the collective goals (Walter *et al.*, 2007). Therefore, a high collaboration between actors, as well as an effective coordination of its activities, is crucial for the competitiveness of a seaport. Within inter-organisational literature there is, however, a lack of consensus when referring to concepts concerning interactions between actors. Cooperation, coordination and collaboration are such an example, with many authors using these concepts interchangeably (McNamara, 2012). However, there are authors that seek to make a distinction, namely between cooperation and collaboration (McNamara, 2012; Ketchen *et al.*, 2008; Polenske, 2004; Gulati *et al.*, 2005). McNamara (2012, p. 391) summarises the distinctions between the three concepts along a continuum by suggesting that: cooperation pertains to “an interaction between participants with capabilities to accomplish organizational goals but chose to work together, within existing structures and policies, to serve individual interests”; coordination is “an interaction between participants in which formal linkages are mobilized because some assistance from others is needed to achieve organizational goals”; and collaboration refers to the “interaction between participants who work together to pursue complex goals based on shared interests and a collective responsibility for interconnected tasks which cannot be accomplished individually”.

We consider that in the context of seaports the distinction between cooperation and collaboration, as well as coordination, is perhaps less meaningful. These distinctions

are proposed with reference to contexts of organisations that have the possibility of operating independently from the others to achieve their individual goals. At stake are, for instance, business alliances (Sheth and Parvatiyar, 1992), supply chains (Ketchen *et al.*, 2008) or vertical arrangements (Gulati *et al.*, 2005). In a seaport, however, the individual organisations must work together: it is not a matter of choice. Also, although we acknowledge that the definition of coordination may well be suited to relationships between seaport's members, in this essay our focus is on the port authority and its coordinating role, which we will explore below. Hence, we have chosen to use the term collaboration, although we understand that different levels of collaboration may exist. In fact we recognise that McNamara's (2012) definition (see above) involves a high degree of collaboration, and our conceptualisation will be slightly different: we will consider that collaboration is not always based on shared interests; and we will envisage collective responsibility as a goal instead of a means to collaborate. Despite its voluntary nature, inter-organisational collaboration needs shared values between actors in order to allow for their functioning as a clan (Rodríguez *et al.*, 2007). Hence, it is more difficult to transfer knowledge between organisations rather than within organisations (Chang *et al.*, 2008).

The stronger the collaboration between maritime operators, the more exposed they are to knowledge flows and the bigger the probability for them to proactively share information and knowledge (Lee and Song, 2010). Nevertheless, in a seaport, collaboration may not develop for itself (de Langen, 2006). Consequently, we contend that a seaport may share the dilemmas of traditional supply chains: how to motivate its members to share valuable knowledge, since an organisation tends to keep valuable knowledge for itself; and how to overcome the fact that classic collective action problems may emerge (Sporleder and Peterson, 2003). From a supply chain perspective, actors may try to benefit themselves even if damaging the whole chain in terms of performance

(Cabrita and Bontis, 2008; Ketchen and Hult, 2007). Organisations may act in order to achieve their individual benefit, which might lead to an incompatibility of goals and result in collaboration problems (Gulati *et al.*, 2005). Ultimately, their commitment may decrease, thus deteriorating the relationship (Gulati *et al.*, 2012).

Indeed, within a seaport setting, actors may have different goals, which may also diverge from the seaport's ones (de Langen, 2006; Notteboom and Winkelmanns, 2002). If on the one hand the economic development pursued by several actors may decrease their commitment to the seaport, on the other hand, at a societal level, problems may arise from stakeholders' conflict of interests regarding the seaport (Verhoeven, 2010). Some have noted that seaports are becoming mere pawns on a game dominated by major corporations, whose goals are often incompatible with the ones of the PAs (Olivier and Slack, 2006). Seaport stakeholders may try to exert some type of pressure over the seaport (Denktas-Sakar and Karatas-Cetin, 2012). Reasons may be diverse: some actors such as shipping lines or shippers may have their own vested economic interests while community and public stakeholders pursue social and environmental interests (Denktas-Sakar and Karatas-Cetin, 2012). Hence, although collaboration between actors is needed in order for CIC to be created, in some situations actors may exhibit conflictive behaviours, that is, "behaviors or feelings of interdependent parties in response to potential or actual obstructions that impede one or more of the parties achieving their goals" (Bradford *et al.*, 2004, p. 182), thus damaging that same CIC (see chapter 3).

3.2. The role of the coordinator

Our study focus on a network with a public coordinator – a Port Authority (PA) – which we define as an organisation "which whether or not in conjunction with other

activities, has as its objective under national law or regulation, the administration and management of the port infrastructures, and the coordination and control of the activities of the different operators present in the port” (Verhoeven, 2010, p. 251). PAs are organisations which have superior coordination skills and are capable of steering change and influence performance (de Langen, 2004). Casaca (2008) claimed that PAs’ attentions should turn towards strategic issues that could develop a sustainable competitive advantage for a seaport. A compatibility of goals between members and also between members and the seaport as a meta-organisation is crucial in order to promote collaboration and thus IC development. Hence, we consider Marques *et al.* (2011, p. 270) description of the coordinating role of a port authority as “aimed at stimulating cooperation within the network and ensuring that network members make adequate contributions to network performance”. Indeed, collaboration implies dependency relationships between organisations and, consequently, coordination is needed in order to manage those dependencies (Marques *et al.*, 2011).

Besides the fact that coordination can increase competitiveness and the provision of better services (Provan *et al.*, 2007), it can provide an environment facilitative of knowledge transfer and diffusion, namely a local culture where members are highly interdependent (Forsman and Solitander, 2003). Hence, the actions of a network coordinator can be crucial to provide an adequate relational environment (Khoja *et al.*, 2011). Croom and Watt (2000) draw attention to the importance of the relational dimension on the network’s performance, also stressing the control and coordination roles. Relational capital leads to trust, commitment and absence of conflicts and thus leverage the collaborative behaviours, which can thus have a positive effect on achieving individual and common goals (Ziggers *et al.*, 2010).

The network coordinator might influence the structure of the network in order to promote the achievement of individual and common goals (Ziggers *et al.*, 2010). The greater the number of ties between maritime operators, the more knowledge about the industry, market, or the firms' own technology can be shared. Likewise, if ties are strong, the bigger is the probability that information and know-how will be shared between organisations, because when interactions become closer and more frequent, mutual trust can be accumulated (Lee and Song, 2010) and actors can make decisions more quickly.

In short, according to the aforementioned concept of a fourth generation seaport, PAs should go further than the traditional landlord functions, by focusing on the mediation and coordination of stakeholders, i.e. by “acting as facilitators and catalysts in logistics networks, creating core competencies and activities of scope and pursuing strategic activities” (Verhoeven, 2010, p. 252). Indeed, not only should PAs solve collective action problems, but also they should play an important role in several tasks such as the creation of core competencies, development of information systems or port networking (Notteboom and Winkelmans, 2001). These are examples of how CIC can be created.

3.3. Power

As we saw, seaports are complex settings which bring together different actors with multiple interests. When making decisions, PAs have to balance those interests, something which is difficult to achieve (Notteboom and Winkelmans, 2002). In general, various stakeholders with different sources of influence and different levels of power may coexist and interact (de Langen, 2006), and, as such, it is crucial for a PA to understand the power of those different actors (Olivier and Slack, 2006). Coordination arrangements

can be distinguished between those where there is power balance and no actor acts dominantly; those in which arrangements are enforced by a dominant actor; and the ‘middle way’ arrangements, where an actor – usually with no (or no total) enforcement powers – acts as a leader firm promoting collaboration between the other actors (van der Horst and van der Lugt, 2011). A seaport is usually an example of this ‘middle way’, in which the PA acts as the leader. Indeed, Marques *et al.* (2011) consider ports as mixed-type networks where a public organisation acts as a coordinator whose powers are not unbound.

Power is a complex concept and defining it has been troublesome: several interpretations of it can be found in the literature (Belaya and Hanf, 2009b; Clegg *et al.*’s, 2006). One major interpretation of power sees it as something negative, as ‘power over’ (Hardy, 1996) or, in Clegg *et al.*’s (2006, p. 225) words: “as a causal mechanism that makes things happen, often against the will of those to whom it is applied”. Another major approach to power offers a different view by envisaging it as “facilitative, as creative, as something that may be positive” (Clegg *et al.*’s, 2006, p. 225), allowing agents to achieve outcomes they would not achieve by acting alone i.e. ‘power to’ (Hardy, 1996). ‘Power over’ and ‘power to’ depends on a specific situation as well as on the contingent position of the agents engaged in a relationship (Clegg *et al.*’s, 2006). Hence, in this essay we conceptualise power in neutral terms by adopting a broader definition of power, conceptualising it as “a force that affect outcomes” (Hardy, 1996, p. S3).

We draw on Hardy’s (1996) four dimensions of power, that is, power of resources, power of processes, power of meaning and power of the system. ‘Power of resources’ is a basic form of power exercised by the control over, and deployment of, key resources on which others are dependent. This type of power pertains to the mainstream approach which conceives it as the “ability to get others to do what you want them to, if necessary

against their will” (Hardy, 1996, p. 7). Examples of this type of power are information, expertise, political access, rewards, and sanctions. It is task oriented and may be unsustainable. ‘Power of processes’ is exerted when dominant groups aiming to achieve their desired outcomes make use of different means in order to prevent others to fully participate in the decision-making processes. This power is exerted “behind the scenes”. On the other hand, it can be used to introduce change by opening access to others in order to participate in decision-making, raising awareness and bringing new points of view in order to change the agenda. ‘Power of meaning’ is a sophisticated dimension of power which is mobilised so as to change the perceptions, the cognitions and the preferences of others. It can be used to prevent conflict in the first place. It can legitimise certain decisions (stressing their goodwill) while undermining the legitimacy of others. It uses symbols such as compensation or consultation, economic reports and other means in order to attain an aura of rationality leading to legitimacy. These three dimensions can be used in order to change the ‘power of the system’, which is the one embedded in the structures, culture, values and traditions of the organisation.

From another point of view, we argue that the power of resources can be exerted by both coercive and non-coercive means, while the other three dimensions mostly involve the use of non-coercive types of power (Belaya and Hanf, 2009a). Coercive power represents a more negative approach to power. Although it might be very useful to align actions and to maintain an order, its exercise tends to deteriorate relationships and should be used with caution. Non-coercive power represents a more positive approach which may help promote collaboration between members and thus common interests and goals. From this latter approach, the focal actor can use it as a coordinating mechanism aiming to develop relationships, solve conflicts and increase the performance of the whole network. Hence, power can be used in order to orchestrate and direct the actions needed

to achieve the strategic goals of an organisation, namely by promoting collaboration and preventing the emergence of conflict (Hardy, 1996).

Coercive and non-coercive types of power can be used with success by a PA to manage a network (Belaya and Hanf, 2009a). Power can be used as a mechanism to coordinate social relationships between collaborating actors (Belaya and Hanf, 2009a). Both coercive and non-coercive forms of power may be exercised in order to develop *socialisation* between network members, i.e. to develop “the level of interaction between, and communication of, various actors within and between the firms, which leads to the building of personal familiarity, improved communication, and problem solving” (Cousins *et al.*, 2006, p. 853). Indeed, in some situations the network coordinator may not have the legal authority to impose rules to other members of the network. This is, as we saw, the case of PAs, which instead may try to influence the other members to act in line with the network’s goals, in order to increase the network performance (Marques *et al.*, 2011), thus making use of a non-coercive type of power. Information and knowledge sharing can be facilitated by formal socialisation mechanisms, such as regular meetings, co-location or cross-functional teams, or through informal interactions, which may allow the transference of organisational goals and values and the creation of a value congruence or alignment, as well as mutual understanding (Cousins *et al.*, 2006).

In a sense, the relationship between power and trust emerges at this point. From a stakeholder management perspective, long term relationships must be fostered through several mechanisms such as by sharing a culture and developing mutual trust, thus developing a high spirit of collaboration trying to address stakeholders’ interests (Denktas-Sakar and Karatas-Cetin, 2012). These type of relationships are important to develop communication, to increase knowledge sharing and mutual forbearance and also to decrease contractual governance (Khoja *et al.*, 2011). Hence, trust is an important

variable concerning collaboration efficiency (Rodríguez *et al.*, 2007). On the other hand mistrust is the main barrier for a successful collaboration (Hudson *et al.*, 1999). According to Vlaar *et al.* (2007, p. 410) trust “encompasses not only the belief in the ability of a partner organization to accomplish a task but also the belief in the goodwill or positive intentions of this partner and the perception that it adheres to acceptable values” while mistrust “derives from the negative hypothetical possibility regarding a partner’s behavior and actions”. Spatial proximity, frequent interaction and wide scope are factors that can promote trust (Nooteboom, 2004). The judgment as to the firms are or not trustworthy, is built up by repeated encounters (Polenske, 2004). Trust is part of an organisation’s intellectual capital, and can have an important role in decreasing transaction costs, speeding up processes and develop an innovative culture (Bachmann, 2003). Recipients want to absorb knowledge when it is valuable for them and it is very difficult to transfer knowledge and thus improve organisational effectiveness when there is a culture of resistance to sharing instead of a culture of trust and collaboration (Easterby-Smith *et al.*, 2008; Sveiby and Simons, 2002). For example, in a supply chain, trust, mutual respect and close interaction between members are concepts that help assessing the degree of its relational capital (Cousins *et al.*, 2006). As trust reaches high levels, other consequences apart from information exchange might become evident, such as a possible decrease in the level of conflict or in the perceived need to monitor (Cousins *et al.*, 2006). In an alliance, the building of trust and commitment itself may facilitate coordination (Gulati *et al.*, 2012). Analogously we consider that, within a seaport, trust and commitment are crucial variables to facilitate the coordinating role of a port authority.

3.4. Summing up

This section has reviewed literature that allows us to theorise on the issues involved in the management of IC in the context of seaports. We started by pointing out that a seaport can be conceptualised as a meta-organisation. In this type of setting, CIC exists alongside IIC, and the transfer of intangible assets between members of the organisation is of order for the creation of CIC to be fostered. This is potentiated by an environment of collaboration – something which is not automatically ensured and might even be hard to attain. The role of a coordinator is, among others, that of promoting such an environment. To do so, several dimensions of power may be mobilised, including those involving the mobilisation of resources, sometimes in coercive manner, but also those that involve the non-coercive promotion of a relational context (of trust) that facilitates the pursuing of collective objectives.

4. The case study – the Seaport of Aveiro

The Seaport of Aveiro is a rich setting due to its complexity as an organisation composed of several organisations, each one having their own individual goals and different levels of power but connected by interdependency relationships.

With the exception of the largest UK ports, port management in EU continues to be controlled by the public sector, with the landlord management form being the dominant one (Verhoeven, 2009). This model is predominantly applied in the largest continental European ports and may gain further importance in the future, due to reforms in member states (Verhoeven, 2009). The Seaport of Aveiro is a fully state-owned organisation and is regulated by a public body (IPTM, for *Instituto Portuário e dos Transportes*

Marítimos). Seaports located along the Portuguese Atlantic shore are managed by PAs. Although the direct influence of landlord PAs on cargo flows may be limited, they can act as facilitators and catalysts in the logistics chain through the creation of adequate facilities, the development of strategic relationships with other transport nodes and the creation of networks with other ports (Verhoeven, 2009).

4.1. Methodology

The case study is a suitable method to develop an understanding of how a PA manages a seaport's CIC in order to achieve the meta-organisation's goals. In fact, in this essay we study a contemporary and complex phenomenon within its real-life context (Yin, 2009). The peculiarities and typical characteristics of the context under study can be crucial and single case studies can allow a better understanding of those (Dyer and Wilkins, 1991).

Data was collected between April 2010 and September 2014. To understand how the Aveiro's PA (henceforth, APA) manages IC in the Seaport in order to achieve collective goals, multiple sources of information were used: exploratory discussions and interviews with members of the Port Authority, documentary evidence and also direct observation.

In a first stage (2010 – January 2012) we analysed the empirical context and specifically the network of firms operating in the Seaport of Aveiro. Four exploratory discussions and two semi-structured interviews (with an approximate length of 90 minutes) were conducted with an APA's Member of the Board (MotB). These discussions/interviews allowed us to identify a set of illustrations about how APA

manages the complex network of members, all with different goals and different levels of power. In a second stage (2012-2013), four semi-structured interviews were conducted with the same MotB, lasting 75 minutes (approximately). These interviews served to gain a deeper understanding about how the APA manages the CIC of the Seaport, namely by questioning how it promotes a positive collaboration and how it prevents or manages situations of conflict. We also conducted a semi-structured interview with a Business Development Manager (BDM), who had a high involvement with the Port Community Association (see below) since its creation, and possessed a solid general knowledge about several episodes that occurred in the Seaport. This interview lasted 2 hours. Moreover, an unstructured interview (with a length of about 75 minutes) was held with a Responsible for the Environmental Area (RftE). She made a description about how the APA's environmental system works, and above all she provided important insights about its impact on the behaviour of the Seaport's members. Finally, two semi-structured interviews (the first one, lasting about 30 minutes, and the second one lasting 2 hours) were conducted with an IT System Manager. All the semi-structured interviews were recorded, with the most important parts being transcribed. Also, we took notes in all discussions and interviews. In 2014 we conducted two additional semi-structured interviews – one with the MotB and the other with the ITsM – in order to precise some events. These interviews had an approximate length of 30 minutes each.

Documentary data was crucial for our research. We collected internal documents within APA's headquarters between June and August 2012. These documents included emails, faxes, contracts, internal memos and several reports. The analysis of the documents regarding the Environmental System (see Appendix 4), which included environmental management manuals and progress reports, were crucial for us to understand its use for the achievement of specific collective goals. Other important documents, such as the Strategic Plan or annual reports and accounts, were analysed.

Those documents were publically available due to the fact that APA is a public and state-owned organisation. The fact that the documents were archived in “physical” folders and organised chronologically according to subject or Seaport’s member allowed for faster access. Other records such as newspapers and radio interviews also provided us with important evidence. Finally, direct observation of the workings of the Seaport allowed us to consolidate our understanding on the way operations are conducted in the Seaport.

Regarding the analysis of the collected data, Yin’s (2011) five stages were followed. Specifically, the data was compiled, disassembled and finally reassembled. The reassembled data was then interpreted and conclusions were drawn. This process was an iterative one.

4.2. The management of IC by APA

As mentioned above, our analysis of the way APA managed IC in the Seaport of Aveiro was based on a series of illustrations that allows us to describe, and theorise on, IC management in the context of seaports. Our approach is to structure the description and analysis of the case on the basis of the theoretical insights outlined in section 3.

4.2.1. Collaboration as the source of sustainable IC

One observation could be immediately made regarding the way APA manages IC in the Seaport: direct initiatives aimed at fostering IC were promoted. Indeed, the APA mobilised its resources to conduct training actions and to provide information and knowledge both internal and directed to other members of the network, something that

may be seen as an example of developing human capital. It also implemented collective instruments such as information systems, quality systems, or an environmental system, that may be seen as examples of structural capital. And it put obvious care in establishing good relationships with external constituencies, such as large industrial customers, municipalities and local communities, thus enhancing the Seaport's relational capital. However, it was clear within APA that these initiatives were insufficient: there was a strong perception that the APA had to count on the collaboration of the Seaport's various organisations in order for IC to be created and its destruction avoided. As the Business Development Manager (BDM) put it:

“The many institutions that are part of the maritime transportation and of a Port also began to realise that by working together, and not back-to-back, things could be improved”.

The collaboration of the members of the Seaport of Aveiro was seen as key for several reasons. Firstly, the very direct initiatives of IC creation promoted by APA depend on that collaboration. For instance, APA's information system would only be enacted in the Seaport and produce positive effects on IC if relevant members accepted those systems and acted in conformity with their prerequisites. Secondly, collaboration may in itself lead to IC creation: e.g., exchanges of information and knowledge between members will have positive effects on the seaport's IC. The APA directly created such effects, by making its own knowledge available to others, but horizontal exchanges of information and knowledge (i.e., between other members) are crucial. Thirdly, and *a contrario*, the lack of collaboration may have detrimental effects on the seaport's IC if, for example, it implies a break in the service provided and a reputational loss. In the Seaport of Aveiro, labour problems faced by the Seaport in recent years are a clear effect of this. The objective for APA is thus to ensure collaboration (towards itself and also between members) and to ensure that this occurs in a sustainable manner. Clearly, the strategy

deployed by APA, and the way it mobilised different dimensions of power, had this objective in mind. To this issue we now turn.

4.2.2. The four dimensions of power in action

We found evidence that the APA, in trying to enhance the IC in the Seaport, relied on resources, managed processes and attempted to shape, or create conditions for the shaping, of meanings of the network's members. These movements were tactical, in that specific problems were solved and direct objectives of IC creation (or prevention of IC destruction) were pursued, but also strategic, in that the promotion of an overall environment of collaboration – in a sense shaping the power of the system – was also an objective for the APA.

Several examples of the APA's 'power over resources' were collected. Some such resources were linked to the fact that, within the Seaport of Aveiro, several organisations work under licences or concessions agreements. Licences are short term authorisations granted by the APA – the representative of the owner of capital – and some members might fear that their actions might have negative consequences regarding their attribution. In short, the ability to *sanction and the authority attached to it* is a key resource available to a network coordinator with APA's characteristics. Importantly, the very fear of sanctions enhances the ability of the APA to enact direct measures that are conducive to IC enhancement. For instance, in 2001 the APA implemented an Environmental Management System (EMS) for the whole Seaport, in order to improve the Seaport's (poor, at the time) environmental reputation. Environmental procedures, however, could not be directly imposed on other members. In any case, and bar for some minor and short

episodes of resistance, virtually all relevant actors conformed to those procedures, and the EMS was successfully implemented. As the MotB put it:

“The president of the board wanted [to] expand [the EMS] to other companies, although he knew from the start that they would not be forced to do what we recommended them to do. But in practice they did. Why? I think it was for fear of reprisals by the APA (...)”.

The whole process of implementation of the IT System also provides evidence of the power over resources. Seaport of Aveiro’s IT system (Gespor) was firstly used in 1997, replacing paper-based procedures. The new system was relatively well accepted, but a major challenge emerged in 2005, when a major update was conducted, and a web environment was introduced. Shipping agents demonstrated some reservations to the new system, and some initial resistance was observed, due mostly to confidentiality concerns. These actors were afraid that others could get information that would allow them to steal their customers. However, the APA’s power to sanction was again relevant. According to the MotB:

“APA had a mandatory power over the shipping agents when approaching them individually”.

Also, we could find here a patent example of *expertise* power: the update was carefully prepared; it was introduced with some important upgrades towards previous versions, especially regarding user interface (which was considered a weakness in the ‘windows version update’); and training was thoroughly conducted. Besides, in previous years APA had gained a reputation of accessibility and competence regarding the solving of problems with the information system, as the following statement by the IT Systems Manager reflects:

“[Throughout the years before 2005 and namely during the ‘windows version update’] APA’s people related to IT systems almost became employees of the port community. If a computer was blocking, an APA’s employee was detached to solve the problem”.

This reputation greatly enhanced the ability of APA to bring about desired behaviours when the update was introduced in 2005: acceptance of the ‘new’ system by shipping agents was eventually ensured.

In other occasions the APA also used an *informational* type of power over resources. Again, the EMS implementation provides an example of this. According to the RftE, the APA often had to provide information to several actors, namely regarding the law on environmental issues. Through those processes, knowledge was being transferred and IC being created, both directly (an increased awareness on environmental issues was introduced) and indirectly (the knowledge transfers facilitated, or even allowed for, the implementation of the EMS).

The previous examples involve situations in which the APA mobilised resources in order to influence decisions and behaviours in specific initiatives of IC creation: the EMS or the IT system. Besides this, the APA’s mobilisation of resources was also linked to the development of a context capable of facilitating the creation (and the non-destruction) of IC: the mobilisation of resources for the preparation and discussion of a new Strategic Plan for the Seaport, or for the creation of a Port Community Association, are obvious examples of this. In short, the movement into the ‘less visible’ dimensions of power – those involving the power of processes and the power of meanings – required the access of APA to resources such as reputational or financial ones, or those related to APA’s authority.

Movements of the APA into the less visible dimensions of power were obviously linked to situations in which the mobilisation of resources was not sufficient to achieve desired outcomes, or when these resources were scarce or even unavailable. One example of power of processes emerged during the 2005 upgrade of the IT system in the Seaport. An important actor for the IT system to be updated and streamlined was the Customs. However, APA had no formal authority over Customs, and the initial attitude of Customs was one of refusal to collaborate – due to security concerns. APA had then to promote a compatibility of goals by making use of non-coercive dimensions of power. The APA proposed and successfully introduced a working group, in the form of a committee, including those involved in the implementation of the IT system. Customs were, of course, one of the members of this committee. In it, issues related with the system were discussed and awareness was raised on the advantages of the system and on the inefficiencies caused by work duplication. In time, the participation of Customs in such a committee was an important basis for its initial reservations to be dropped. According to the MotB we interviewed:

"Customs went from a position of resistance to a position of cooperation and acceptance of the system. Why? Because it was created a working group with elements of Customs, port authorities and shipping agents in order to change the IT system and approximate it towards the needs of Customs".

The deployment of ‘power over processes’ was also evident in one of the main problems faced by the Seaport of Aveiro in recent years: the recurrent labour disputes that have surfaced, to some extent as a consequence of institutional arrangements regarding Ports’ workforces and, also, as a consequence of the growing problems with the Portuguese economy. The main labour problem in the Seaport of Aveiro concerns its Dockers Pool. This is a pool of stevedores that provides the workers necessary for port

operators to conduct operations in the Seaport. Up until recently, there was a situation of exclusivity: port operators were obliged to draw on this workforce. The Dockers Pool in Aveiro is an organisation owned by major port operators and by the stevedores' Union, under the coordination of a National Regulator, namely regarding service prices. Since 2001, several labour problems and strikes took place because of the economic problems with the Dockers Pool. Indeed, recurrent losses were registered, and three basic alternatives were on the table: to lower the size or wages of the workforce; to rise prices; or to rely on the port operators to support losses. Not surprisingly, conflicts between the Union and port operators emerged, and the reputation of the Seaport – key to its IC – has been at stake in recent years.

APA lacked the resources to directly intervene, since – once again – it does not possess any formal authority over both the Union and the port operators. When the equilibrium that had been achieved in the 1990s was broken in about 2001, the APA moved into less visible dimensions of power. One important example of the 'power over processes' regarded the involvement of APA in the fixation of prices of the stevedoring service: until the early 2000s, these were fixed, on an annual basis, by the Dockers Pool under the tutelage of the National Regulator, with no intervention by APA. In the early 2000s, the APA proposed to the National Regulator that it was involved in this process, and this latter institution agreed: from then on, price proposals would be sent to APA, and APA would have to analyse and provide an opinion. Besides, the APA suggested that an annual meeting was established with the Dockers Pool, in order for these issues to be discussed prior to the sending of an opinion to the Regulator. Importantly, exchanges of information regarding financial issues were conducted in these meetings. In general, thus, the APA was able to change the whole process through which price negotiations were conducted, and forced the parties to share and discuss the issues involved.

In 2005 APA developed and approved a Strategic Plan for the whole Seaport, where the main strategic goals were defined and means to achieve them were discussed. During the process several meetings with various members of the Seaport were promoted in order to determine the main aspects that should be addressed. The APA used the Strategic Plan as a tool to foster collaboration between several members. Knowledge was exchanged and the Strategic Plan was used as a tool to align members' interests into one document and as a way to prevent possible conflicts. The same can be said of the Aveiro's Port Community Association (PCA). This is a non-profit association of private law, free to membership. It was created in 1998 with the aim of developing Seaport competitiveness by improving the coordination between Seaport's actors and by proposing improvements for the Seaport. According to the PCA's president in an interview to a radio conducted in 2014 ¹⁷: "This association is more like a discussion forum about several themes, which end up to be the PCA's goals (...). Its main goal is to promote the development and promotion of the Port, as well as the rationalisation and debureaucratisation of administrative processes, etc. (...) It also has some intervention regarding legislative changes which are being proposed by and discussed with the government. The PCA discusses these changes with their members and with the government".

The setting of these two *fora* as the appropriate ones for the discussion of collective problems, in both cases an initiative of the APA, are important movements into the power of processes, something that is reinforced by the fact that the agenda for meetings is defined by the APA.

¹⁷ Radio Voz da Ria, 17 May 2014 in <http://www.portosdeportugal.pt/sartigo/index.php?x=11865>

Of course, movements of the APA into the aforementioned dimensions of power constituted an important basis for its ability to successfully mobilise the third – and arguably key – dimension of power: the power of meanings. The attempt to shape the meanings attached to situations was recurrent in the APA's actions, something that was evident in the various episodes we gathered in the case. In the IT system implementation, an adequate management of key actors' meanings was evident. Take the following statement by the IT manager:

“There had to be some operation of charm and some marketing to make [the shipping agents] realise [the benefits of the IT system] (...) which lasted for two, three years (...). Individual and collective meetings with the shipping agents were made in order to explain the advantages of the system and to promote the perception that the APA was committed to solve any problem (...). Also, to make them realise that this was a collective system”.

The EMS implementation also provided examples of this type of concern. As we saw, the implementation of the EMS was aided by the mobilisation of appropriate resources, but – both in the setup of the system and subsequently – the APA sought to instil appropriate ‘environmentally friendly’ meanings in the organisations involved in the implementation. According to the MotB:

“At an environmental level we are concerned in having an environmental policy for everyone. The APA defined the environmental policy for the entire Port of Aveiro and [then] provided training to key stakeholders, i.e., those with higher risk of environmental impact, and makes regular audits of actions of these actors”.

Indeed, several commitments were stated in earlier EMS reports, among which we highlight the following: “To actively involve all [APA] collaborators through the

development of competencies and through awareness building about the environmental impacts of the respective activities; to actively promote communication and collaboration with other stakeholders; to sensitise and involve the port community in the adoption of good environmental management practices”.

The issues at stake were often discussed in collective *fora* such as the Port Community Association (PCA), where an overall objective of improving the environmental consciousness of the Seaport’s actors was pursued. Indeed, this Association was an important setting for horizontal communication and for the sharing of ideas between the Seaport’s members, and often the APA used it as a means to attempt to shape other actors’ meanings towards collective goals. The same can be said of the Strategic Plan for the Seaport, which was presented and discussed in collective meetings where most relevant actors, and even some external stakeholders, were involved. These initiatives allowed for the open discussion of specific issues and for the legitimization of specific changes (such as the IT projects). In general, it was obvious that these were settings in which meanings linked to the need to adopt a ‘collective perspective’ towards the Seaport, and to the importance of ‘collective interests’ for all Seaport’s members, were advanced: “All [PCA members] realise that they can draw value and that all gain with the Port’s advance (...) [thus] this interaction has been very important for the development of the Port (...), we are already together and are becoming stronger” (APA’s Board President) ¹⁸.

On the other hand, APA used the PCA as a means to align members’ interests with their own’s. According to the Business Development Manager (BDM), APA uses the PCA as a tool to achieve its goals by using it as a consulting organisation for potential

¹⁸ Radio Voz da Ria, 29 April 2014 in <http://ww2.portodeaveiro.pt/sartigo/index.php?x=6181>

improvements or to use it as a lobbying ground in certain political aspects, for example. Also the APA's President of the Board indirectly admitted the use of the PCA for attaining its goals, by stating (in 2014) in an interview to a radio that "The PCA is an organisation that supports the ports' administration (...) it is a support body to the Port that helps it to implement its strategy and safeguard its interests (...) it's a body that help us and that was established for that purpose and naturally there is a permanent relationship between the PCA and the Port Authority"¹⁹. Due to the fact that usually it is the Port Authority who proposes the issues to be discussed we consider the PCA as a governance mechanism used by APA in order to promote collaborative behaviours between their members. Clearly, the APA manages the processes of discussion and decision-making involved in the PCA, which can be seen as an example of the 'power of processes'.

We consider that through the PCA, the APA exerts a non-coercive type of power over other members in order to align their interests through a trust based collaboration and aligning those interests with APA's goals. The joint promotion of the Seaport or the development of its brand are such examples. Indeed, in the last several years the PCA has been participating in several business actions. The consequence is a more sustainable²⁰ form of CIC creation and also a much more effective form of prevent conflicts and hence the development of collective intellectual liabilities. Specifically, we consider that this illustration suggests the use of Hardy's (1996) power of meanings. Indeed, through the PCA, the APA uses a non-coercive type of power towards other members to legitimise its actions. The consulting of other members and the creation of a collaborative environment might be seen as a way used by APA to justify its actions, giving a meaning to its strategies.

¹⁹ Radio Voz da Ria, 29 April 2014 in <http://ww2.portodeaveiro.pt/sartigo/index.php?x=6181>

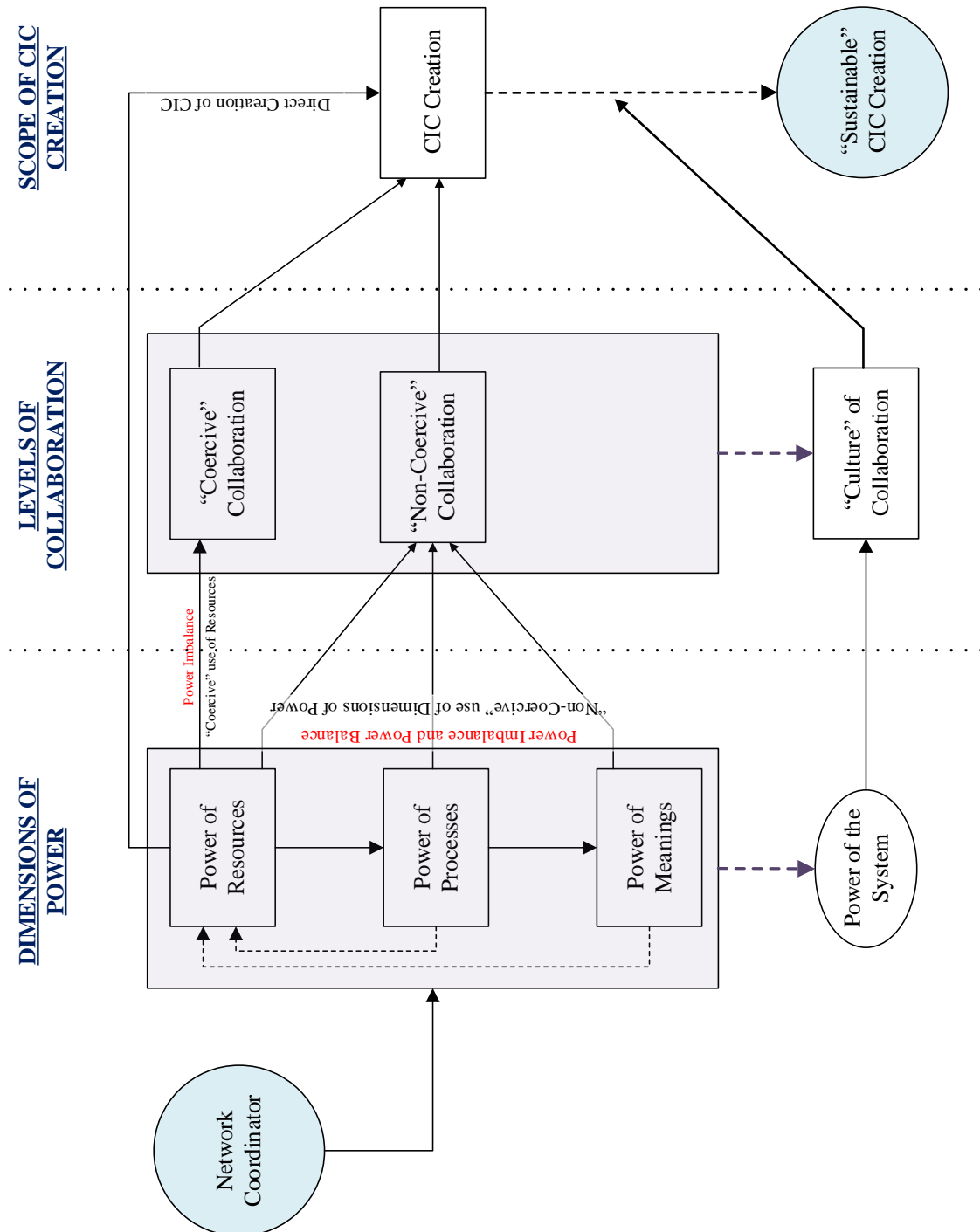
²⁰ We understand 'sustainable' as synonymous of 'endurable'

In general, both the PCA with its meetings and the discussions surrounding the Strategic Plan are means through which the APA attempts to foster a sense of belonging to a collective with common goals and, in this sense, to instil a collective culture in the organisation. This seems consistent with the concept of ‘power of system’. The EMS creation is another example of that. Behind its development there was a broader goal to extend it to the whole Seaport. We see it as a mean to develop an environmental culture within the Seaport.

5. Discussion

Our case study allowed us to confirm that it is through movements into the various dimensions of power that the network Coordinator – in the circumstance, the APA – seeks to manage CIC in the Seaport of Aveiro (see figure 4.1). Efforts were made, for instance, to promote initiatives aimed at the direct creation of CIC: organisations such as APA can serve the network they coordinate either through the roles they elect to play on it or by providing infrastructure or resources to support others in playing roles within the network (Allee, 2010). Good examples of this are the provision of training, implementation of a new IT system or the establishment and fostering of good relationships with relevant external stakeholders. Mostly, these implied the mobilisation of resources – financial, informational or reputational.

Figure 4.1 – A CIC management framework



We soon understood, however, that the role of APA in managing the Seaport of Aveiro is pretty much in line with the literature reviewed (e.g. Notteboom and Winkelmans, 2001; Marques *et al.*, 2011; Verhoeven, 2010; Ziggers *et al.*, 2010): we found strong evidence on the attempts by APA to stimulate *collaboration* between members of the Seaport, to establish ties and dependencies – of a formal and of a social kind – between those members, thus fostering an adequate relational environment. On the one hand, and in line with authors such as Lee and Song (2010) or Pöyhönen and Smedlund (2004), collaboration was seen as necessary to ensure the success of APA's direct initiatives of CIC creation: an IT system, for instance, would not be successfully implemented without full collaboration of all relevant members. On the other hand, collaboration was envisaged as leading to a sharing of knowledge and, generally, to the 'indirect' creation of CIC throughout the Seaport.

A seaport is an example of a context where inter-organisational relationships are dependent on power, values and members' interests (Rodríguez *et al.*, 2007). It was evidenced in our case study that a port authority such as APA has to balance different interests when making decisions, something that constitutes a difficult task (Notteboom and Winkelmans, 2002). From a relational point of view, our main objective was to explore how APA exerts its power in order to achieve its goals, specifically regarding the fostering of collaboration and the creation of CIC. Hardy's (1996) model was clearly applicable: we found several instances of movements into the several dimensions of power – resources, processes and meanings. Interestingly, our evidence points to the fact that these dimensions cannot be seen as independent or insulated from each other: resources must be available for the management of processes to be possible, and adequate processes may facilitate the management of meanings, which in turn may improve the resources available to actors such as the APA.

To ensure collaboration, the APA had to assess the relative powers of the parties involved in the Seaport, and, based on such assessments, to conduct adequate strategies involving the above dimensions of power. In some instances, the APA may be faced with situations of power balance. In the case of Customs, or also in the Dockers Pool crises, the APA had to deal with organisations that were ‘its equals’. These were situations in which resources to coerce other parties were not available. Here, movements into other dimensions of power – of processes and of meanings – were conducted and, at least in the illustrations we provided, collaboration was eventually achieved. Informal mechanisms such as embeddedness or identification allowed for the overcoming of collaboration problems (Gulati *et al.*, 2005).

In other instances, of course, there were situations of power imbalance: i.e., the Port Authority could assume a position of superior power towards other actors within the Seaport. When this was the case (e.g. shipping agents in the IT system illustration; or the companies involved in the EMS implementation), coercive resources were available for the APA to ‘force’ collaboration. In Gulati *et al.*’s (2005) terms, collaboration problems were surpassed by formal mechanisms such as contracts, monitoring or even the deployment of sanctions. However, (see above) our conceptualisation of collaboration involves different degrees and, although coercive power might be useful to provide ‘quick fixes’ to problems, it may have negative consequences regarding relationships. As Hardy (1996) put it, (coercive) power based on resources is a “task oriented” one and “the excessive use of coercion may engender a backlash in the people over whom power is exercised” (p. 7). Arguably, this is especially important when it comes to the management of CIC: intangible assets such as knowledge are more difficult to control than tangible ones, and thus resistance may be more complex to detect and overcome.

This much seemed to be recognised by APA in our case study: in the EMS and the IT system illustrations, for instance, the APA mobilised and deployed its resources in coercive manner when it had the possibility to do so. However, it was noticed that the APA kept mobilising the other dimensions of power, namely the power of processes and the power of meanings, in order to legitimise and consolidate those systems. Indeed, in our study we found that the APA made use of non-coercive types of power in order to foster trust between Seaport's members and a collective culture based on shared interests and a high level of commitment and responsibility. This collective culture leads to a high level of collaboration and knowledge exchange, and thus to a more "sustainable" type of CIC. It was because of this that the APA preferred to make use of power from a more positive stance, namely by managing processes and also by managing meanings in order to legitimise its actions at the eyes of the other members, even in situations of power imbalance towards other parties. The effective communication of the Strategic Plan and the several *fora* in which this plan was discussed, as well as the intensive use of the PCA to legitimise APA's intentions and prevent conflicts, are examples of that. This study supports de Langen's (2004) claim that port authorities should act as cluster or "community" managers, i.e., coordinators that try to maintain or improve good relationships between different stakeholders pursuing different individual goals, in order to promote a culture of trust (Verhoeven, 2010). In Hardy's (1996) terms, movements of the APA into the various dimensions of power were conducted in order to consolidate an adequate 'power of the system' involving a culture of collaboration capable of leading the Seaport to a superior level of CIC – one characterized by sustainability.

6. Concluding remarks and future development of the research

Managing IC in a meta-organisation such as a seaport is a complex task when compared to individual organisations. It is the goal of this essay to provide evidence about how a port coordinator manages the seaport's CIC in a setting which is characterised by the coexistence of several actors possessing different levels of power and following their own interests. Actors may manifest non-collaborative or even conflictive behaviours not only between them, but also towards the network coordinator.

The case study provided us with illustrations, which along with the literature review served our purpose of developing a conceptual framework (see figure 4.1) depicting the management of the CIC of a meta-organisation by a network coordinator, in the circumstance a port authority.

We claim that Hardy's (1996) framework of power can be effectively used in order to explain how IC is created in a meta-organisational setting. Our evidence suggests that, besides directly promoting CIC through the deployment of resources, the network coordinator fosters collaboration and knowledge transfer between seaport's members. This is done through the mobilisation of various dimensions of power – of resources, of processes and of meanings – in coercive and non-coercive fashions. Coercive deployment of resources can only take place in situations of power imbalance between the network coordinator and other actors, but even in such situations non-coercive approaches are preferred. When there is power balance, non-coercive mobilisations of power are the only ones available to the network coordinator. Moreover, the mobilisation of those dimensions of power can have beneficial effects in the development of a trust based collective culture grounded in a 'power of the system' that can potentiate the level of collaboration, thus leading to a more sustainable type of CIC. We found this to be an important objective of the network coordinator.

This essay provides both academics and practitioners with important contributions. It leads to a better understanding of power dynamics and its effects over IC in the context of meta-organisations such as seaports. As stated by Lee (2006), an effective coordination of the network requires a good integration of its members, from a social interaction perspective. The coordinator should function as an integrating mechanism aiming to “guide” members to achieve common goals (Winkler, 2006). This integration can be achieved by sharing visions and goals, or by sharing processes and procedures, by the use of a common IT system or by meeting frequently, for example (Lee, 2006). Indeed, we consider that our research supports this claim. Visions and goals were shared by means of a Strategic Plan, processes and procedures were shared efficiently using a common IT System, and the PCA provided us with an example of the possible advantages resulting from meetings.

This study is not without limitations. First of all, the case study was conducted in a specific context – a seaport. Therefore, generalisation of this research should only be conducted in a theoretically framed perspective. Secondly, our goal was to know how a network coordinator manages a network in order to develop CIC. Consequently, we only focused our research in a network coordinator and how it used its power to influence other members. Also, as Hudson *et al.* (1999) we adopted the normative view of collaboration as a good thing, despite the fact that collaboration can also develop bad outcomes.

Finally, we consider that there are several avenues for further research. Future studies could address the individual point of view of network members, i.e. how they exert their power in order to develop their own IIC even if damaging the collective. It would also be important to further explore why, in this type of setting, there are organisations that tend to be more collaborative than others. Finally, although a network coordinator may act in order to align interests and promote collaboration, there are

occasions where conflict might prevail. Future research could address how a network coordinator uses different approaches to manage conflict in order to minimise the effects of a potential collective intellectual liability.

Chapter 5 – Conclusion

1. Introduction

In this chapter we present the main conclusions and implications of the research. The chapter starts with a summary of the thesis and then the thesis' main contributions are outlined. Subsequently, we discuss the thesis' limitations and suggest some opportunities for further research. Finally, we make some concluding remarks.

2. Summary of the thesis

This thesis resulted from an in-depth single case study conducted in the Portuguese Seaport of Aveiro. Its purpose was to develop understanding about the creation and deterioration of intellectual capital in this type of setting, which we labelled here as 'meta-organisation'.

The thesis has been divided into three essays, in which we explored different aspects of the aforementioned theme. The first essay, which corresponds to the second chapter, aimed to improve comprehension about how IC is created and deteriorated in a meta-organisation. More specifically, how a meta-organisations' CIC and its members' IIC are interrelated and how this relationship affects IC creation and deterioration at both levels of analysis, from a longitudinal perspective. Several conclusions emerged from this essay. A general conclusion is that in meta-organisations it is possible to establish a distinction between the CIC of the whole network and the IIC of each individual member, and that these two levels are interconnected. We found evidence, however, that this

relationship is not a linear one. Indeed, the creation of IC by individual organisations may lead to the emergence of a collective intellectual liability. Also, changes in the CIC may have distinct impacts on members' IIC. CIC and IIC appear as a function of both collective and individual dimensions. Another conclusion is that there are situations whereby IC may be created or even deteriorated at both individual and collective levels of analysis, *in an interdependent way and through time*: indeed, in some instances firms might incur in IIL, thus giving primacy to collective interests, but in the medium to long term the creation of CIC may translate itself into an intellectual asset for that firm. Inversely, a firm which pursues its individual goals and acts “against” collective ones, damaging the CIC, may suffer an IIC deterioration over time.

The second essay, which has been presented in the third chapter, explores the main factors that, in a meta-organisational setting, underlie the creation and deterioration of CIC. More specifically, we aimed to identify those factors and understand how they are articulated to produce these effects. The factors we identified were, on the one hand, the compatibility/incompatibility of goals and, on the other hand, the power balance/imbalance. Conclusions on the articulation of such factors in producing effects on CIC are then encapsulated in an integrated framework where we suggest that these are two crucial determinants for the creation of CIAs or the emergence of CILs. Importantly, this framework incorporates a dyadic perspective and a network one: from a dyadic perspective, we point out that collaborative behaviours resulting from a compatibility of goals between the network coordinator and other members promote the creation of CIC (although in certain circumstances there is the possibility that a CIL emerge, namely due to the non-fulfilment of non-monetary obligations). Still from a dyadic perspective, CIC can also be created in situations of incompatibility of goals, when the network coordinator makes use of a power exercise to promote a collaborative behaviour. We also conclude that CIL may emerge when there is a non-collaborative or conflictive behaviour between

APA and a member as a consequence of an incompatibility of goals and a situation of power balance between them prevails. From a network perspective we argue that when members' goals are compatible and they collaborate to achieve the meta-organisations' goals, CIC may increase. However, CILs might emerge when there is a relationship of power balance between members and they adopt a conflictive behaviour (due to incompatibility of goals) and at the same time the network coordinator does not possess the power to align members' goals with the meta-organisation's ones.

Finally, in the third essay, displayed in the fourth chapter, it was our objective to understand how a network coordinator manages the meta-organisation's CIC from a power perspective. We used Hardy's (1996) framework of power as a lens of analysis. Several conclusions emerged. Firstly, mobilisation of different dimensions of power – in both coercive and non-coercive ways – is crucial to effectively manage the meta-organisation's CIC. Secondly, although coercive resources may be deployed when there is a situation of power imbalance between the network coordinator and other actors, a non-coercive approach is preferred: by mobilising non-coercive dimensions of power, the network coordinator may foster a trust based collective culture within the seaport, which is deemed appropriate to develop a more 'sustainable' type of CIC. Indeed, a collective culture grounded in a 'power of the system' may enhance the level of collaboration between the various actors. On the other hand, in situations of power balance, the mobilisation of the less visible dimensions of power is mandatory in order for the network coordinator to achieve its (the meta-organisation's) goals regarding CIC creation.

3. Contributions

This thesis makes several contributions for the literature in IC. In the first place, we consider the application of the IC concept to a complex setting such a seaport – i.e., a meta-organisation – as a major contribution. Indeed, as long as the authors are aware, IC has not been applied to such contexts. Most IC literature focus on individual firms, although a more recent trend applies this concept to broader units of analysis such as regions or nations. Besides extending the concept of IC to this type of setting we also contribute to research on intellectual liabilities, which is still very scarce. Furthermore we consider that there is a gap in IC literature regarding the application of the concept of intellectual liabilities to ‘meso’ or ‘macro’ units. The research of De Santis and Giuliani (2013) confirms this trend: it accounts for only 25 studies regarding intellectual liabilities, with the majority of these being theoretical and focused on the development of awareness on this topic.

By conceptualising the seaport as an organisation *per se*, with its own IC, and composed of several organisations with their own IC, the first essay contributes to our understanding of the effects of the interdependency between the meta-organisation’s CIC and its members’ IIC and of how this affects the creation and deterioration of IC at both levels of analysis. We contribute to the literature by showing that the IC of a meta-organisation is different from the sum of the individual ICs of the individual organisations composing it, i.e., the whole (CIC) is different from the sum of its parts (sum of the IIC of the members). Indeed, we suggest that there are CIC dimensions that go beyond the individual ones. From a managerial point of view, this can be very useful in the sense that it may create awareness over the coordinator regarding the aforementioned relationship between the collective and the individual ICs and the effects that members’ actions (including their own) might have over the seaport’s CIC.

The second essay contributes to develop comprehension about the main factors that, according to a relational perspective, affect the meta-organisations' CIC, and how this comes about. By developing an integrated framework, we sought to understand how CIAs are developed or CILs emerge in such context. Specifically, compatibility of goals and power may have a crucial role in order to understand those effects. Although the importance of collaboration to IC creation has been emphasised in IC research, we contend that the introduction of the “conflictive behaviour” concept as determinant of intellectual liabilities might be crucial for an efficient management of the CIC by the network coordinator.

Finally, the third essay contributes to an improved understanding of how CIC can be effectively managed by a network coordinator in this type of setting. Issues of power had been neglected in IC literature and, specifically, this essay contributes to increase knowledge about the dynamics of power in the process of CIC creation and (prevention of its) deterioration. In this research, we used Hardy's (1996) framework of power to comprehend how different dimensions of power are mobilised in order to develop a collective culture that potentiates a higher level of collaboration and, thus, a more ‘sustainable’ form of CIC.

This research is also important to practitioners, especially to organisations acting as network coordinators. In the first place, this research should create awareness among these practitioners regarding the interdependency between IIC and CIC and, thus, about the impact that every actor belonging to the network might have over the CIC. Also, the research can provide them with a “tool box” that they may use in order to manage the meta-organisation's CIC more efficiently. By understanding the dynamics of interests and power and its effects over the creation of CIC and the prevention of CIL, managers will be in a better position to create value for their meta-organisations.

4. Limitations and opportunities for further research

A first limitation results from the fact that we conducted a case study in a seaport which has its own specificities. We did not make any comparison with other organisations belonging to the same or other industries. Consequently, although the validity of our interpretations seems sound, statistical generalisation of this research to other situations may not be appropriate. I.e., generalisation should only be conducted in a theoretically framed manner. Hence, we suggest that this research should be replicated in other seaports with different characteristics and other types of members. It should also be interesting to replicate this study in other settings that present similar features to those that were identified in this thesis regarding seaports, such as the case of airports.

Future literature should also seek to develop even further the ‘managerial’ implications regarding IC in a network. Although coordinators such as port authorities may try to influence other actors’ behaviours, namely by promoting a trust based collaboration between them, there is always the possibility that conflict might emerge. In this thesis we did not deeply explore how a port coordinator should act when the management of conflict becomes necessary. According to Caddy (2000), organisations should address intellectual liabilities in the short term, by using their own intellectual assets. Therefore, future research could address different ways of managing conflict in order to minimise its effects over the CIC.

Furthermore, within a seaport, the relationship between several members can be based on a logic of coopetition, where there is simultaneously competition and cooperation (Lee and Song, 2010). Regarding IC, it can be expected that coopetition in the network can promote knowledge acquisition, i.e., that members may share knowledge between them in order to maximise their common interests (Lee and Song, 2010). Although in our research there is evidence of collaboration between competitors – the

operators – who entered into a conflict with another actor – the Union, thus damaging the CIC, it would be very useful to further explore the effects of coopetition over a meta-organisation's CIC (at both intra and inter-organisational views). Another particular situation regarding collaboration is the collusion between actors. Hence, both topics of coopetition and collusion in this type of context can and should be addressed in the future.

A final avenue for further research concerns the effects of tangible assets on the creation and deterioration of IC in a meta-organisation such a seaport. Indeed, it would be interesting to explore how investments in tangible assets may lead to both individual and collective intellectual assets and/or liabilities. We did not address this topic during our research, although we had access to some data regarding the development of a railway which had several non-tangible impacts, such as the introduction of new processes which led to knowledge exchange among the port community.

Finally, our research focused on the perspective of the whole seaport (as represented by the APA). Further investigation should address the mechanisms used by other actors to follow their interests, even if damaging the whole seaport's CIC.

5. Concluding remarks

Since the last decade, IC research has been addressing 'new' contexts, namely nations, regions, cities or clusters. However, other settings are still underexplored: meta-organisations such as seaports constitute an example of such settings. Seaports are characterised by high levels of interdependency between its members and by the crucial role that collaboration and the attainment of a collaborative culture assume on its performance. As long as we are aware, the understanding and management of this type

of organisations from an IC perspective has been a neglected topic. This thesis contributes to address this gap in the literature by enhancing the understanding about the phenomenon of IC creation and deterioration in this type of setting.

Appendix 1 – Intellectual Liabilities

		Examples
External liabilities IC deterioration results from outside the organisation	Force majeure Risk of IC deterioration results from environmental events, which organisation has no control over and that are usually unexpected and difficult to anticipate	Global warming Ageing population Depletion of natural resources Product tampering and other acts of terrorism Political instabilities Financial and economic crises Strikes and other social unrest Boycotts
	Market liabilities Risk of IC deterioration results from normal competitive forces in the market. Although organisation has no control over the liabilities, they should not be unexpected and should be anticipated	Industry life cycle Crowded markets or population density Strong and successful competitors New players in the market Technological innovation leading to creative destruction (e.g. the internet) Substitute products or services
Internal liabilities IC deterioration results from within the organisation. The organisation has (or can have) control over these liabilities	Human Liabilities Organisation's human resources are the source of deterioration	High employee turnover Risk of losing key employees Internal competition Not-invented-here syndrome Inadequate training and development
	Structural liabilities Organisation's non-human resources (such as culture, procedures, processes or codified knowledge) are the source of deterioration	Liability of newness Liability of smallness Group think Top management homogeneity Long management tenure Past performance Weak strategic planning process Poor information or knowledge infrastructure Orphan knowledge Cost of ignorance or cost of not knowing Domestic quarrels or struggle for power Bureaucracy and organisational inertia Social rigidities and organisational sclerosis Knowing-doing gap Knowledge-unfriendly culture Hierarchical and complex organisational structure
	Relational liabilities Relationships with external stakeholders (such as customers or suppliers) are the source of deterioration	Poor corporate reputation Bad word of mouth Poor product or service quality High relational turnover Potential product liability suits Lack of strategic alliances Relational complexity (complex linkages within the firm and with external bodies)

Source: adapted from Stam (2009)

Appendix 2 – Discussions and Interviews

Date	Interviewee	Type of Interview	Approximate Length
April 2010	MotB	Exploratory Discussion	90 m
August 2010	MotB	Exploratory Discussion	90 m
November 2010	MotB	Exploratory Discussion	90 m
February 2011	MotB	Semi-structured Interview	90 m
September 2011	MotB	Semi-structured Interview	90 m
January 2012	MotB	Exploratory Discussion	90 m
June 2012	MotB	Semi-structured Interview	75 m
July 2012	MotB	Semi-structured Interview	75 m
July 2012	BDM	Semi-structured Interview	120 m
July 2012	ITsM	Semi-structured Interview	30 m
July 2012	RftE	Unstructured Interview	75 m
August 2012	MotB	Semi-structured Interview	75 m
January 2013	MotB	Semi-structured Interview	75 m
February 2013	ITsM	Semi-structured Interview	120 m
September 2014	ITSM	Semi-structured Interview	30 m
September 2014	MOTB	Semi-structured Interview	30 m

Appendix 3 – Semi-Structured Interviews Guides

FEBRUARY 2011 – SEMI-STRUCTURED INTERVIEW

INTERVIEWEE: Member of the Board

MAIN GOALS: Understand the Seaport of Aveiro as a network

- How do you see the Seaport?
 - Do you see it as a local, cluster or network?
- From an IC approach, what should I study in the seaport? The entire network?

[Presentation to the interviewee of a detailed port logistics system (see Roh *et al.*, 2007) depicting different sub-systems with its actors and functions]

- What are the most important firms or activities?
- Analyse with the interviewee the model presented in Roh *et al.* (2007) and compare it with the Seaport of Aveiro reality
 - Address it with the interviewee and understand what actors are present in the Seaport of Aveiro, their tasks and relationships.

SEPTEMBER 2011 – SEMI-STRUCTURED INTERVIEW

INTERVIEWEE: Member of the Board

MAIN GOALS: To better assess the particularities of the Seaport as a network. Gain some insights about events that are able to illustrate the phenomenon of IC creation and deterioration in the Seaport

- Why is it interesting to study IC in a seaport?
- What distinguishes this network from others?
- Can we talk about a port's (as a whole) service?
- Can you give me examples of events that occurred in the seaport and that are able to illustrate instances of IC creation and destruction?
 - Gain insights from the interviewee about the processes leading to those effects.
- Talk about collaboration and competition within the network.
- How does the APA (as the network coordinator) manage IC? What is its perception regarding the effects resulting from the relationship between the IIC and the CIC?
- Is the APA concerned in managing the Seaports' IC?
- Does the APA develop IC for the Seaport?
- Does the APA promote knowledge creation/transfer within the Seaport?
- Does the APA manage individual actors or activities' IC in different ways? Does the APA assess the HC, SC and RC?

JUNE 2012 – SEMI-STRUCTURED INTERVIEW

INTERVIEWEE: Member of the Board

MAIN GOALS: Gain further information about the Seaport of Aveiro's network and also about what type of documents we may have access.

Previously presentation to the interviewee of a framework (grounded on the literature) depicting relationships between the following actors:

- **Port Authority**
 - **Shippers**
 - **Shipping Agents**
 - **Freight Forwarders**
 - **Shipping Companies**
 - **Terminal Operating Companies**
 - **Transport Companies**
 - **Tug Boat Service**
 - **Pilot Service**
 - **Marine Police**
 - **Customs**
 - **Labour Union**
 - **Other Service Providers**
-
- What are the Seaport of Aveiro's most important actors and what are their tasks?
 - From a logistics perspective, how do these actors relate with each other in the Seaport of Aveiro?
 - What is the best approach to study the network?
 - What type of documents may I have access?

JULY 2012 – SEMI-STRUCTURED INTERVIEW

INTERVIEWEE: Member of the Board

MAIN GOALS: Collect evidence regarding IC creation and destruction within the Seaport

- Talk about organisations that can give a high contribution to the Seaport's performance and that are sensible to several issues, such as training, procedures, etc.;
- Talk about APA's concerns regarding developing IC and ask to illustrate;
- Talk about the Dockers Pool and the strikes and assess what effects this event involves regarding IC;
- Assess other possible episodes to illustrate the case study.

JULY 2012 – SEMI-STRUCTURED INTERVIEW

INTERVIEWEE: Business Development Manager

MAIN GOALS: Gain knowledge about the relationship between individual firms and the Meta-organisation and its impact on the creation and deterioration of IC

- What is the role of the PCA (Port Community Association)?
- Who can respond for the collective?
- Is there knowledge transfer between actors?
- In what extent can a firm damage the collective by creating IC for itself? Do you know any firm that had sacrificed itself for the sake of the collective?
- How can knowledge transfer benefit the seaport?
- Can you give some example of events within the port community that contributed to increase knowledge within the Seaport? And to improve processes for the Seaport as a whole?
- Assess the effects of collaboration for the Seaport;
- Assess the Importance of JUP to create IC (e.g. developing better procedures);
- Why did the Customs resist?
- What is the [New Business Unit] and what is its importance for the port?

JULY 2012 – SEMI-STRUCTURED INTERVIEW

INTERVIEWEE: IT System Manager

MAIN GOALS: Gain knowledge about the relationship between individual firms and the Meta-organisation and its impact on the creation and deterioration of IC. Gain insights regarding the JUP episode.

- When a firm simplifies a process will it transmit that knowledge to other firms?
- What are the effects of collaboration and knowledge transfer both for the firms and for the Seaport?
- What is JUP, how does it work and what are its advantages? What was the process of implementation?
- Do you think JUP contributed to improve collaboration?

AUGUST 2012 – SEMI-STRUCTURED INTERVIEW

INTERVIEWEE: Member of the Board

MAIN GOALS: Collect evidence regarding IC creation and destruction and also about collaboration and conflict between members

- Talk about examples of value creation or destruction for the Seaport;
- Talk about relationships between organisations or events that led to creation or destruction of value;
- Talk about the Dockers Pool and its members. Are they competitors? Do they collaborate? Can you give any example of collaboration for CIC creation (even between competitors)? How can they create/destroy IC?
 - <gather details, including about the strikes>
- In the “the strikes” illustration, what were the effects of the strikes? How APA (re)acted? How IC was created and destroyed at both levels of analysis?
- Can you give an example of a firm that destroyed its value for the sake of the collective?
 - Customs sacrificed itself for the sake of the collective?
 - Firms have to adapt their processes to the seaport?
- Do operators or any other organisations create value for the Seaport by creating new processes at an individual level?
- May the loss of reputation have a negative effect on the organisations that compose the Seaport?

JANUARY 2013 – SEMI-STRUCTURED INTERVIEW

INTERVIEWEE: Member of the Board

MAIN GOALS: To gather detailed information about the selected episodes in the first stage of data collection

The New Business Unit

- What are the main advantages/outcomes for the Seaport resulting from the collaboration? And for other actors?
<assess possible effects in terms of IC>
- Did the Business Unit develop new competencies for the Seaport as a whole?
<assess possible effects in terms of IC>
- Do you know any example where the creation of IC at an individual firm may have a negative impact for the Seaport's IC?

The Strikes

- What are the reasons behind the strikes?

The Environmental Management System

- Did the Seaport's image improve as a result of the EMS?
- Can bad procedures at a firm level (for example) have an impact at the Seaport as a whole?
- Regarding complaints, was there a tendency to decrease? Why (why not)?
- Do you know any more examples where bad procedures had negative impacts for the Seaport?
- Is there a purpose of affecting individual firms by making 'collective' investments?

The IT System

- Assess the differences between Gespor, JUP and PIPE;
- Was the IT system imposed? If so, how?
- Gain knowledge about Customs' procedures;
- Assess Customs' behaviours over time;
- Talk about the memo where an actor claimed that the project would not be successful;
- In the end, do you think that Customs sacrificed itself for the sake of the Seaport's clients?

FEBRUARY 2013 – SEMI-STRUCTURED INTERVIEW

INTERVIEWEE: IT System Manager

MAIN GOALS: to gather information about the IT system evolution along time, the actors involved, the relationships between them and namely how it contributed to IC creation and deterioration

- How did the IT System evolve along time?
 <try to detect processes of IC creation and deterioration>
- What were the advantages of the IT System for the port community?
- Was the IT system imposed? If so, how? If not, why?
- Since its implementation, has any problem/conflict emerged? If so, what was its impact and for how long did it last?
 <see possible effects in terms of IC>
- Was there an improvement in procedures? Why or why not?
- What were the advantages for the Seaport of Aveiro?
- What are the reasons behind the Customs resistance and later acceptance?
- Was the ‘electronic cargo manifest’ imposed? If so, by whom?
- Did the ‘Customs problem’ damage the whole port? Why and how?

SEPTEMBER 2014 – SEMI-STRUCTURED INTERVIEW

INTERVIEWEE: Member of the Board

MAIN GOALS: to gather some details about the Shipping Agents concerns towards the IT system and how APA exerted its power to attain its goals

- For how long did this problem (shipping agents concerns) last?
- What type of power does the shipping agents have over the APA?
- What type of power does the APA have over the shipping agents?
- Do you think that there was a power balance or imbalance? Towards whom?
- Did Shipping Agents have an impact similar to Customs, i.e. of non-collaborative behaviour?

SEPTEMBER 2014 – SEMI-STRUCTURED INTERVIEW

INTERVIEWEE: IT System Manager

MAIN GOALS: to gather some details about Shipping Agents concerns and behaviours towards the IT system

- For how long did this problem (shipping agents concerns) last?
- What were those concerns (both when the IT system was implemented and regarding the Web update)?
- How did the Shipping Agents act (in terms of behaviour)?
- What was the position of APA to overcome the problem?

Appendix 4 – Documentary Data and other Records

The ‘Business Unit’ Documents:

DATA	RELEVANCE
<p>Documents about the concession (requests, etc.) reports, licenses or faxes</p> <p>Examples:</p> <p>Request from the operator to build and explore a port infra-structure within a strategy of promotion and sustainable development of the Seaport (February 2006);</p> <p>Concession contract (August 2006);</p> <p>Complaint by the Operator to APA</p>	<p>These documents provided several insights:</p> <p>The logic of compatibility of goals (which is a crucial concept in this thesis) is behind the request’s argument to explore the new infra-structure.</p> <p>Also, the concession contract can be regarded as ISC (Individual Structural Capital) for the operator. Furthermore, it includes a clause that tries to safeguard a fair competition within the seaport. Indeed, it tries to avoid the depreciation of a collective (competitive) culture.</p> <p>Finally, collaboration between organisations is also stressed in these documents.</p>
<p>“E-80 – Corredor multimodal para a Europa” – Presentation of the Business Unit: video and slides</p>	<p>Important to comprehend some specificities of the organisation under study. This data provided general knowledge about the new Business Unit, such as its history, activity or performance.</p> <p>Examples of IIC creation are drawn from this presentation. For example it is claimed that the Business Unit is certified since 2010 (ISO9001) or that efficiency increased due to improved procedures. Also, according to its [the Business Unit] director “In 2011 [we had] the necessity to improve the logistics and operational operations”.</p> <p>Difficulties in attaining collaboration (which is a crucial concept in this thesis) are also mentioned: “I am aware that some firms, some stakeholders, still live in these [former] stages [regarding logistics] and that, sometimes, it is difficult to dialogue [and] propose situations or procedures [in terms of supply chain management, Total Quality Management or full integration]” (Business Unit director)</p>

The 'IT System' Documents:

DATA	RELEVANCE
<p>Documents regarding PIPE (for '<i>Procedimentos e Informação Portuária eletrónica</i>') project</p> <p>These documents include minutes, memos or faxes. They also include PIPE's project presentation (slides) and the Public tender for the adjudication of the study regarding the standardization of information, simplification and harmonization of procedures of Portuguese ports</p>	<p>These documents provided some historical knowledge about the antecedents of the JUP (the IT system implemented in all Portuguese seaports), namely regarding its genesis (the PIPE project) and its main goals, such as the simplification of procedures or the exchange of information.</p>
<p>Study about the standardization of information, simplification and harmonization of procedures of Portuguese ports, conducted by a Consulting Firm for the APP - Association of ports of Portugal. It includes an analysis of macro processes, processes, sub-processes, activities and procedures</p>	<p>This work was very important because It allowed to better comprehend the specificities of the setting under analysis – a Portuguese seaport, namely about its main actors, functions and the relationships between them, and also about the main processes (e.g. the entry of a ship in the port and the involved operations).</p>
<p>APP's (for Associação de Portos de Portugal) minute (November 2003)</p>	<p>This minute provided evidence about initial concerns (including Customs' ones) regarding a potential excess of "informatisation", and also about Customs' attitude before the non-collaboration problem occurred in 2005.</p>
<p>"Cluster do Mar" magazine (May-June 2012, pp. 56-57)</p>	<p>An article named "JUP – Uma janela de oportunidade" was important to comprehend JUP's development. JUP resulted from the PIPE project, which aimed to simplify, normalise and harmonise all the Portuguese ports' procedures. The article provides a historical overview. Hence, it was also important to comprehend, to a certain extent, how agents operated before the existence of an IT system.</p>

The ‘Environmental Management System’ Documents:

DATA	RELEVANCE
<p>EMS audit questionnaires (regarding environmental issues)</p> <p>Non-compliance documents and “lists of observations”</p>	<p>The questionnaires provided information about the main topics audited. They also contained some open-ended questions, whose answers allowed to assess improvements in IC, such as if the questionnaire itself allowed the firm to “know/improve its knowledge about environmental performance” or to “update information about environmental legislation”.</p> <p>Also, non-compliance documents were useful to provide us with information regarding environmental problems detected in the audits and also about the proposed corrective actions.</p>
<p>Environmental Management Manuals, Reports and Progress Reports (2001-2008)</p>	<p>The commitments disclosed in these reports clearly indicate the following objectives: develop new environmental capabilities (thus creating IC), promote collaboration and, namely, to expand the EMS to the whole seaport (by sensitising and involving the port community). There was the goal of changing the environmental culture of the Seaport. Indeed, it is assumed in the first report that this would be a long process.</p> <p>The analysis of these reports provided evidence about IIC creation, respectively: Human Capital (increase of knowledge through training in environmental and safety issues provided to workers of APA and other organisations), Structural Capital (through better procedures) and also Relational Capital (as a consequence of collaboration between organisations).</p> <p>Indeed, training actions are stressed along all reports. Examples of better procedures are also stressed, such as the establishment of a new procedure in order to conform to ISO14001 (and set up an effective EMS) or the importance of an IT System (CDN <i>for</i> Centro de Despachos de Navios) as a “tool” to improve communication and, hence, the development of better procedures regarding port operations. Attention is also paid to the APA’s environmental image (which in this particular case can be considered as synonymous of the Seaport’s image). For example, we can infer from the EMS progress report 2006-2008 that there was a concern regarding the creation of CIC, specifically relational (or at least, an attempt to avoid its deterioration). There was an effort to prevent conflictive behaviours.</p>

	<p>Finally, we found evidence about the success of the audits such as by improving the awareness about environmental concerns. Indeed, the analysis of these reports suggested the development of IC as a consequence of the audits conducted by the APA.</p> <p>A longitudinal analysis of these reports suggested that there was the concern for developing competencies not only at an individual level (i.e. IIC) but also at a collective one: creating CIC through extending the EMS to the whole seaport. Over time, the use of the EMS as a “tool” to improve environmental procedures was being successful. Environmental performance and awareness was being improved and an environmental “culture” was being developed. In 2008 the use of the EMS as a “tool” to improve the individual and the collective environmental culture was perceived as being a success.</p>
<p>External communications to the EMS (2004-2008)</p> <p>Examples:</p> <ul style="list-style-type: none"> • Communication to the port operators regarding the spillage of cereals into the Aveiro’s estuary • APA warns several organisations about the results of the audits, requesting corrections or improvements. For example: vestiges of burnings, wastes or oil drums, abandoned cars, the non-conducting of an accident simulation or even complaints. • Faxes and letters from important organisations to APA informing about their actions in response to improvement solicitations • Documents from APA informing several organisations to follow environmental rules and also to take necessary measures (according to the audits) 	<p>These communications provided us with important information:</p> <p>Several communications from the APA provided evidence about the emergence of (structural) ILs as a result of bad procedures conducted by various organisations.</p> <p>Some organisations’ response to APA’s communication provided evidence of IIC creation through improved procedures. Furthermore, there is evidence that, in certain issues, APA does not possess a mandatory power. Instead, it has to resource to other means to attain its goals. For example, the communication regarding the spillage of cereals suggests a non-coercive use of power by the APA. The APA’s option was to “sensitise” other actors to improve procedures (i.e. to develop IC). Indeed APA could not impose the environmental rules to other actors. However, the analysis of the communications suggest the success of the audits as a tool to exert power.</p> <p>Also, a Communication issued in July 2004 provides evidence about the importance given to training (i.e. to IC creation)</p> <p>Furthermore, these communications stress the emergence of CILs such as the deterioration of the relationship between the port and</p>

<ul style="list-style-type: none"> Letters from port members replying that they took the required measures to conform the auditing Several complaints and petitions are addressed to APA (such as by the population) Letter to an important organisation informing that APA's administration is still waiting for anti-polluting measures to be taken 	an important external stakeholder – the population. It also stresses the APA's non-coercive approach in trying to solve the problem.
--	--

The 'Strikes' Documents:

DATA	RELEVANCE
<p>Expresso, 12 Agosto 2009</p> <p>Diário Económico, 15 December 2011</p> <p>Ionline, 24 December 2011</p> <p>Dinheirovivo, 9 January 2012</p> <p>Ionline, 10 January 2012</p> <p>Exame Expresso, 10 January 2012</p> <p>Jornal de Negócios, 2 October 2012</p> <p>Ionline, 27 November 2012</p> <p>Radio Voz da Ria, 17 May 2014 <i>in</i> http://www.portosdeportugal.pt/sartigo/index.php?x=11865</p> <p>Radio Voz da Ria, 29 April 2014 <i>in</i> http://ww2.portodeaveiro.pt/sartigo/index.php?x=6181</p> <p>Radio Voz da Ria, 29 April 2014 <i>in</i> http://ww2.portodeaveiro.pt/sartigo/index.php?x=6181</p> <p>TV coverage</p>	<p>These documents provided evidence about the historical facts concerning the strikes mentioned in this thesis. It allowed to better comprehend its causes and, namely, the behaviours of several actors.</p>

Communication from the PCA in http://ww2.portodeaveiro.pt/sartigo/index.php?x=5939	Important to comprehend PCA's position towards the Customs' actions
--	---

Other Data:

DATA	RELEVANCE
Labour and Employment Bulletin, n. 1, 8/1/2014	This document clearly states the goals of the Union, namely to defend their associates' [in this thesis the stevedores] best interests.
Strategic Plan	<p>This document states the Seaport main goals, such as to increase its competitiveness. Knowledge about the third type of strategic goals was important to this thesis, due to the concepts stressed. The development of better procedures (through an IT system), the development of collaboration between actors and the flexibility of stevedoring operations are important examples of these goals.</p> <p>It was also important to allow evidence about the importance of the collaboration of several actors in implementing the strategic plan. It clearly states that the Port community, which has common interests with the Aveiro's Seaport should collaborate in the implementation of the strategic plan, by participating in partnerships and cooperating for the promotion of the Seaport and the region.</p>
Operating Regulation of APA, SA	Important to gain generic knowledge about the Seaport of Aveiro (e.g. what public authorities pertain to the Seaport) and the APA (e.g. its goals or its competencies – such as of supervision).
Annual reports Sustainability reports	<p>Important to assess the Seaport goals, APA's competencies or its main types of members. Through the analysis of strategic maps we could better assess the main Seaport goals, such as “to simplify processes and to align the port community main actors”.</p> <p>Also, it is stressed the importance of managing APA's Human Capital, or the importance of promoting the brand</p>

	<p>“Port of Aveiro” in collaboration with the port community, for instance.</p>
<p>Workshop attended in 7th December 2010: “The role of ports in competition: a supply chain management perspective”</p>	<p>This workshop was important to gain initial knowledge about the specific context under analysis – the Seaport of Aveiro – and its strategy for the long term. The Seaport and its actors were described. It was also fruitful to comprehend its role in a broader activity: maritime transportation and the logistics process.</p>

Appendix 5 – Descriptive Codification

		Instances of evidence from interviews
Processes of CIC Creation	CSA (Collective Structural Assets) Creation	<p>“We are within the port community trying to build a common project with regard to bulk liquids, the chemical market, integrating some competencies (...) instead of each [organisation] works for itself , we all work together (...) it is rather an organisational issue”</p>
	CRA (Collective Relational Assets) Creation	<p>“[The reputation of the Seaport of Aveiro has improved to the eyes of the various actors because of this service that aimed to mitigate the problems]. We have become a help desk to the entire port community and then the port image won something”</p> <p>“The Seaport’s image clearly was reinforced [due to the inclusion of the new business unit in its presentations]. It is a new variable in terms of value proposition for our clients. We didn’t have any facilities with those characteristics. Also, by making such a huge investment, the operator gave a proof of confidence in the Seaport, which is a positive signal for the Seaports’ reputation”</p> <p>“This collective procedure (the environmental management system) minimises the bad impacts resulting from the population complaints. When the population complains, we say that we have an environmental management system and present a responsible for the environment, whom speaks to them, makes the diagnosis of the problem, presents solutions, sharing it with them (...) they get a much higher confidence”</p> <p>“Complaints have been reduced, but this has to do with the fact that we have solved the problems (...) the fact that we have an environmental management system allows us to better solve the problems and allows the population to have a communication channel”</p> <p>“To give more examples of IC, in the port community we are associated with the University of Aveiro and the ISCIA (...) with both we are developing training programs where APA’s members are lecturers on those institutions (...) we influence and encourage the development of research in the Seaport area, which we hope will improve and extend our knowledge”</p>

Processes of CIC Deterioration	CSL (Collective Structural Liabilities) Deterioration	<p>“The Seaport as a whole was being negatively affected because procedures could be quicker and the Seaport more efficient (...). [Also] this was a period when the entire port community was joined around a system and one very important member was not aligned with them”</p> <p>“There was a liability for the Seaport. [JUP adaptation lasted] two or three years in order to benefit Customs. If they had adhered right in the beginning, the official acceptance would have taken place in 2005”</p> <p>“The Seaport as a whole was being negatively affected because [without the Custom’s resistance] procedures could be more expedited and the Seaport more efficient (...) whereas a problem could be solved in hours it was rather solved in days”</p>
	CRL (Collective Relational Liabilities) Deterioration	<p>“In this period of time we [APA] received a lot of complaints (...) We had a lot of difficulties and spent some resources with it. [We had to] provide training because the application was more demanding. [There were] complaints from everyone. Communication has become very worse. (...) What they [shipping agents] made in two minutes, now they needed fifteen minutes. (...) it was a very complicated phase [in terms of reputation] especially for the Seaport. For companies, that was a measure implemented by the Seaport and which questioned the whole system which was already essential (...) Without a doubt [companies perceive this as a bad idea from the port]. (...) the organisations would rather prefer to return to the previous system, the use of paper, because it was impossible to work in those conditions”</p> <p>“This came at a time when much dredging was being made in the estuary and many criticisms regarding the Seaport of Aveiro were made (...) It was not APA that appeared in the newspapers but rather the Seaport of Aveiro”</p> <p>“The [new business unit] project was expected to have a market share much higher than what it is experiencing (...) those expectations were stated in the contract (...). Customers’ expectations were that the project would be very successful, among others. By not having the success, the reverse happens. The initial proof of trust also becomes a proof of distrust. The evolution of time captures both: creation and deterioration”</p> <p>“The fact that ETP is insolvent destroys intellectual capital for the collective. Customers are much more wary of doing business with the Port of Aveiro when one of the key players is in a major crisis process”</p>

		<p>“Due to the winds, there is a tendency of small particles to be drawn into the population. There were some problems (...) which led the population to complain”</p> <p>“[The strikes] destroyed so much value within the port, which curiously they are now the ones (the Union) wanting to establish direct relationships with customers (...) to regain the trust of customers in the Seaport”</p>
--	--	---

Processes of IIC Creation	HC, SC and RC creation	<p>“At an environmental level we are concerned in having an environmental policy for everyone. The APA defined the environmental policy for the entire Port of Aveiro and [then] provided training to key stakeholders, i.e., those with higher risk of environmental impact and makes regular audits of actions of these actors”</p> <p>“The [new business unit] has a license to use an area in the dry bulk terminal”</p> <p>“The processes are the same ... there is a RftE... [they] have a lot of rules. First, they provide members of the APA with training, then to organisations selected in terms of its higher environmental risk [such as] fuels, shipbuilding (...)”</p> <p>“The [Operator] did not created a company, it created a brand (...) [the new business unit developed new competencies for the port as a whole] (...) There was [now] a new market segment that would have to be handled in a different way (...) and the operator cannot act alone. For example, they had to train stevedores specifically for that unit, which are exclusively dedicated to it”</p> <p>“With the railway, new knowledge that we (port community) did not have was introduced (...) [knowledge] was acquired within the competencies of the several members of the port community (processes and the organisation of the railroad, its technical specifications, some specifications regarding cargo movement and the development of electronic procedures regarding the JUP) (...) There are several aspects to the railway use that we were not used to have (...) knowledge was transferred to the Seaport”</p> <p>“Of course that [If the Union has a tougher attitude towards the port operators, it will increase its reputation towards its members] (...) its management it is very political (...) they take some public attitudes in order to be recognized by its members”</p>
----------------------------------	------------------------	---

Use of different types of Power	Non-coercive Use of power	<p>“[APA uses the port community as a tool] and as a lobbying ground in some political aspects (...) also as an advisory body regarding possible improvements (...) It works more as an advisory body rather than as an operational body”</p> <p>“Customs went from a position of resistance to a position of cooperation and acceptance of the system. Why? Because it was created a working group with elements of Customs, port authorities and shipping agents in order to satisfy the needs of Customs (...) It came a time where [the Customs] understood that [JUP] was a good system and that it would help them in its own work”</p> <p>“The hardest part was to make them realise that the system contemplated all their needs and the security they had with the procedures they had at the time. The concerns were to ensure that with the same speed with which they did their work, they would continue to do it based on the system and the security they had, and their ‘neighbour’ would not get to know of their secrets”</p> <p>“There had to be some operation of charm and some marketing to make [the shipping agents] realise [the benefits of the IT system] (...) which lasted for two, three years (...). Individual and collective meetings with the shipping agents were made in order to explain the advantages of the system and to promote the perception that the APA was committed to solve any problem (...). Also, to make them realise that this was a collective system”</p> <p>“The APA does not impose, does not inspect (...) if problems are reported, the APA will advert the organisation”</p>
	Coercive use of power	<p>“The president of the board wanted [to] expand [the EMS] to other companies, although he knew from the start that they would not be forced to do what we recommended them to do. But in practice they did. Why? I think it was for fear of reprisals by the APA (...)”</p> <p>“[JUP was imposed by APA], and by superior institutions, I think it was the government”</p> <p>“Processes are identical (...) there is a Responsible for the Environment [and] there is a lot of rules (...) training is firstly given to members of the APA, then to selected entities which may have an higher environmental risk [such as] fuels, shipbuilding (...) I admit that some coercion might have been exerted by the RfE”</p>

		“APA had a mandatory power over the shipping agents when approaching them individually”
--	--	---

Networking Behaviours	Collaboration	<p>“(…) we asked for the collaboration of the port community to develop the strategic plan and to understand which issues should be stressed”</p> <p>“The JUP is the first project in which we left the position of full competition [between seaports] and began to cooperate on something. JUP created awareness about the advantages of cooperation (…) cooperation has more to do with simplifying procedures (…) all the interactions that are required to dispatch the ship and the cargo”</p> <p>“The many institutions that are part of the maritime transportation and of the Port also began to realise that by working together, and not back-to-back, things could be improved”</p> <p>“In my perspective 1+1 is greater than 2 and this leads us to do joint actions with the owners of this brand (...). This project in particular will benefit not only the company but also the Port as a whole (...). The Port is interested in promoting this brand individually”</p> <p>“Before, all was done on paper: [Port’s members] had to deliver those papers in a certain place, they had to use phone or fax (...) and a number of these operations (travel, phone calls, ...) are no longer necessary (...) and quickly they realised that there was much to gain (...)”</p>
	Lack of collaboration /Conflict	<p>“Customs is a local authority and many of its directors still felt the need of having the physical document (paper) with the signature for security reasons (...). They hardly voluntarily would abstain, even if there were instructions from the central organism they continued to think that local authorities were still able to require these documents for security reasons”</p> <p>“There is an interesting relationship, which is bilateral and then extends (...) [specifically] how the Seaport relates with the city that surrounds it ... after all there are conflicts ... and there are areas occupied by the seaport”</p> <p>“[Regarding the Union] there is the avoidance of dyadic relationships ... when [the Seaport] was starting a strike and talking about its risks, the Union leader said that the economy was no problem for them. [He claimed that] the problem of the economy was for port operators to whom labour is sold”</p>

<p>Compatibility / incompatibility of goals</p>	<p>“When they sell themselves [the new brand] to their clients, they will sell themselves and also the Seaport, both things”</p> <p>“In a seaport we have companies with potentially conflicting goals (...) The [Seaport’s] aim is not only the result (...) the Seaport (through APA’s actions) aims, among others, to economically develop a region, while individual companies aim to the results (...) in other words, the [seaport’s] value should not be measured in terms of results (...) the various "departments" aim to create profit, while the "company" as a whole aims to ensure, among others, a certain service level”</p> <p>“[The APA] can represent the collective in certain aspects, such as the ones stated in the Strategic Plan”. It will not represent [the collective] in all of them, because some elements might disagree with some issues within the strategic plan”</p>
---	---

References

- Abeysekera, I. (2003), "Accounting for intellectual assets and intellectual liabilities", *Journal of Human Resource Costing & Accounting*, Vol. 7, No. 3, pp. 7-14.
- Ackermann, F. and Eden, C. (2011), "Strategic management of stakeholders: theory and practice", *Long Range Planning*, Vol. 44, No. 3, pp. 179-196.
- Alderton, P. (2005), *Port management and operations*, LLP.
- Allee, V. (2010), "How is value really created? The Value Networks Approach", in Eriksson, A. (ed.), *The Matrix-Post cluster innovation policy*, Sweden: Consultation Report to the Swedish Government Innovation Agency, pp. 35-45.
- Alwis, D., Hlupic, V., and Fitzgerald, G. (2003), "Intellectual capital factors that impact of value creation", in *Proceedings of the 25th International Conference on Information Technology Interfaces (ITI 2003)*, pp.411-416, IEEE.
- Bachmann, R. (2003), "Trust and power as means of coordinating the internal relations of the organization: a conceptual framework", in Nooteboom, B. and Six, F. (Eds.), *The trust process in organizations: Empirical studies of the determinants and the process of trust development*, Edward Elgar Publishing, pp. 58-74.
- Bachrach, P. and Baratz, M. S. (1962), "Two faces of power", *American Political Science Review*, Vol. 56, No. 4, pp. 947-952.
- Barros, C. P. (2003), "Incentive regulation and efficiency of Portuguese port authorities", *Maritime Economics & Logistics*, Vol. 5, No. 1, pp. 55-69.

Belaya, V. and Hanf, J. H. (2009a), "The two sides of power in business-to-business relationships: implications for supply chain management", *The Marketing Review*, Vol. 9, No. 4, pp. 361-381.

Belaya, V. and Hanf, J. H. (2009b), "A multi-theoretical perspective on power in managing interorganizational relationships", *International Journal of Social Economics*, Vol. 36, No. 11, pp. 1040-1049.

Bichou, K. and Gray, R. (2005), "A critical review of conventional terminology for classifying seaports", *Transportation Research Part A*, Vol. 39, No. 1, pp. 75–92.

Bontis, N. (1999), "Managing organisational knowledge by diagnosing intellectual capital: framing and advancing the state of the field", *International Journal of technology management*, Vol. 18, No. 5-8, pp. 433-462.

Bontis, N. (2004), "National intellectual capital index: a United Nations initiative for the Arab region", *Journal of Intellectual Capital*, Vol. 5, No. 1, pp. 13-39.

Borgatti, S. P. and Foster, P. C. (2003), "The network paradigm in organizational research: A review and typology", *Journal of management*, Vol. 29, No. 6, pp. 991-1013.

Bounfour, A., and Edvinsson, L. (2005), "Introduction", in Bounfour, A., and Edvinsson, L. (eds.), *Intellectual capital for communities*, Routledge, pp. xi-xv.

Bradford, K., Stringfellow, A. and Weitz, B. (2004), "Managing conflict to improve the effectiveness of retail networks", *Journal of Retailing*, Vol. 80, No. 3, pp. 181-195.

Cabrita, M. D. R. and Bontis, N. (2008), “Intellectual capital and business performance in the Portuguese banking industry”, *International Journal of Technology Management*, Vol. 43, No. 1, pp. 212-237.

Caddy, I. (2000), “Intellectual capital: recognizing both assets and liabilities”, *Journal of Intellectual Capital*, Vol. 1, No. 2, pp. 129-146.

Cañibano, L., Sanchez, P., Garcia-Ayuso, M. and Chaminade C. (2002), *MERITUM Guidelines for Managing and Reporting on Intangibles (Intellectual Capital Report)*, Vodafone Foundation, Madrid.

Carbone, V. and De Martino, M. (2003), “The changing role of ports in supply-chain management: an empirical analysis”, *Maritime Policy & Management*, Vol. 30, No. 4, pp. 305-320.

Casaca, A. C. (2008), “Motorway of the sea port requirements: the viewpoint of port authorities”, *International Journal of Logistics Research and Applications: A Leading Journal of Supply Chain Management*, Vol. 11, No. 4, pp. 279-294.

Cetin, C. K. and Cerit, A. G. (2010), “Organizational effectiveness at seaports: a systems approach”, *Maritime Policy & Management*, Vol. 37, No. 3, pp. 195-219.

Chang, S. C., Chen, S. S., and Lai, J. H. (2008), “The effect of alliance experience and intellectual capital on the value creation of international strategic alliances”, *Omega*, Vol. 36, No. 2, pp. 298-316.

Clegg, S. R. (1989), *Frameworks of Power*, London: Sage.

Clegg, S. R., Courpasson, D. and Phillips, N. (2006), *Power and organizations*, London: Sage.

Costa, C. C. and da Cunha, P. R. (2010), “Who are the players? Finding and characterizing stakeholders in social networks”, in *Proceedings of the 43rd Hawaii International Conference on System Sciences (HICSS)*, pp. 1-10, IEEE.

Cousins, P. D., Handfield, R. B., Lawson, B. and Petersen, K. J. (2006), “Creating supply chain relational capital: the impact of formal and informal socialization processes”, *Journal of Operations Management*, Vol. 24, No. 6, pp. 851-863.

Croom, S. and Watt, A. (2000), “Managing operations improvements through relational capabilities in the context of small-firm networks”, *International Journal of Logistics Research and Applications: A Leading Journal of Supply Chain Management*, Vol. 3, No. 1, pp. 83-96.

Dahl, R. (1957), “The concept of power”, *Behavioral Science*, Vol. 2, No. 3, pp. 201-215.

de Langen, P. (2004), “Governance in seaport clusters”, *Maritime Economics & Logistics*, Vol. 6, No. 2, pp. 141-156.

de Langen, P. (2006), “Stakeholders, conflicting interests and governance in port clusters”, *Research in Transportation Economics*, Vol. 17, pp. 457-477.

de Langen, P. and Visser, E. (2005), “Collective action regimes in seaport clusters: the case of the Lower Mississippi port cluster”, *Journal of Transport Geography*, Vol. 13, pp. 173-186.

De Santis, F. and Giuliani, M. (2013), “A look on the other side: investigating intellectual liabilities”, *Journal of Intellectual Capital*, Vol. 14, No. 2, pp. 212-226.

Degrassi, S. (2001), *The Seaport Network Hamburg*, PHD Dissertation, University Hamburg.

Denktas-Sakar, G. and Karatas-Cetin, C. (2012), "Port sustainability and stakeholder management in supply chains: A framework on resource dependence theory", *The Asian Journal of Shipping and Logistics*, Vol. 28, No. 3, pp. 301-319.

Dumay, J. (2013), "The third stage of IC: towards a new IC future and beyond", *Journal of Intellectual Capital*, Vol. 14, No. 1, pp. 5-9.

Dyer, W. G. and Wilkins, A. L. (1991), "Better stories, not better constructs, to generate better theory: a rejoinder to Eisenhardt", *Academy of management review*, Vol. 16, No. 3, pp. 613-619.

Easterby-Smith, M., Lyles, M. A. and Tsang, E. W. (2008), "Inter-organizational knowledge transfer: Current themes and future prospects", *Journal of management studies*, Vol. 45, No. 4, pp. 677-690.

Edvinsson, L. (1997), "Developing intellectual capital at Skandia", *Long range planning*, Vol. 30, No. 3, pp. 366-373.

Edvinsson, L. and Malone. M. (1997), *Intellectual Capital*, New York: Harper Business.

Edvinsson, L. (2013), "IC 21: reflections from 21 years of IC practice and theory", *Journal of Intellectual Capital*, Vol. 14, No. 1, pp. 163-172.

Ferenhof, H., Durst, S., Bialecki, M., Selig, P. (2015), "Intellectual capital dimensions: state of the art in 2014", *Journal of Intellectual Capital*, Vol. 16, No. 1, pp. 58-100.

Forsman, M. and Solitander, N. (2003), “Knowledge Transfer in Clusters and Networks – An interdisciplinary conceptual analysis”, *Journal of International Business Studies*, Vol. 3, pp. 1-23.

Gagalyuk, T., Hanf, J. and Herzlieb, C. (2010), “Managing supply chains successfully: An empirical testing of success of supply chain networks in the German fish sector”, *Acta Agriculturae Scandinavica, Section C – Food Economics*, Vol. 7, No. 2-4, pp. 139-150.

Garcia-Parra, M., Simo, P., Sallan, J. M. and Mundet, J. (2009), “Intangible liabilities: beyond models of intellectual assets”, *Management Decision*, Vol. 47, No. 5, pp. 819-830.

Giuliani, M. (2013), “Not all sunshine and roses: discovering intellectual liabilities “in action””, *Journal of Intellectual Capital*, Vol. 14, No. 1, pp. 127-144.

Giuliani, M. (2015), “Rome wasn’t built in a day ... reflecting on time, intellectual capital and intellectual liabilities”, *Journal of Intellectual Capital*, Vol. 16, No. 1, pp. 2-19.

Gulati, R., Lawrence, P. R. and Puranam, P. (2005), “Adaptation in vertical relationships: Beyond incentive conflict”, *Strategic Management Journal*, Vol. 26, No. 5, pp. 415-440.

Gulati, R., Phanish P. and Michael, T. (2012), "Meta-organization design: Rethinking design in interorganizational and community contexts", *Strategic Management Journal*, Vol. 33, No. 6, pp. 571-586.

Guthrie, J., Ricceri, F. and Dumay, J. (2012), “Reflections and projections: a decade of intellectual capital accounting research”, *The British Accounting Review*, Vol. 44, No. 2, pp. 68-82.

Habersam, M. and Piber, M. (2003), "Exploring intellectual capital in hospitals: two qualitative case studies in Italy and Austria", *European Accounting Review*, Vol. 12, No. 4, pp. 753-779.

Hagedoorn, J., Link, A. N. and Vonortas, N. S. (2000), "Research partnerships", *Research Policy*, Vol. 29, No. 4, pp. 567-586.

Hall, P. V. and Jacobs, W. (2010), "Shifting proximities: the maritime ports sector in an era of global supply chains", *Regional Studies*, Vol. 44, No. 9, pp. 1103-1115.

Hardy, C. (1996), "Understanding power: bringing about strategic change", *British Journal of Management*, Vol. 7, pp. 3-16.

Harvey, M. G. and Lusch, R. F. (1999), "Balancing the intellectual capital books: intangible liabilities", *European Management Journal*, Vol. 17, No. 1, pp. 85-92.

Hine, D., Helmersson, H. and Mattsson, J. (2007), "Individual and collective knowledge: An analysis of intellectual capital in an Australian biotechnology venture using the text analytic tool Pertex", *International Journal of Organizational Analysis*, Vol. 15, No. 4, pp. 358-378.

Hudson, B., Hardy, B., Henwood, M. and Wistow, G. (1999), "In pursuit of inter-agency collaboration in the public sector: What is the contribution of theory and research?", *Public Management and International Journal of Research and Theory*, Vol. 1, No. 2, pp. 235-260.

Jacobsen, K., Hofman-Bang, P., Nordby Jr, R. (2005), "The IC rating™ model by intellectual capital Sweden", *Journal of Intellectual Capital*, Vol. 6, No. 4, pp. 570-587.

Joia, L. and Malheiros, R. (2009), “Strategic alliances and the intellectual capital of the firms”, *Journal of Intellectual Capital*, Vol. 10, No. 4, pp. 539-558.

Kaufmann, L. and Roessing, S. (2005), “Managing conflict of interests between headquarters and their subsidiaries regarding technology transfer to emerging markets – a framework”, *Journal of World Business*, Vol. 40, No. 3, pp. 235-253.

Ketchen, D. and Hult, G. (2007), “Bridging organization theory and supply chain management: The case of best value supply chains”, *Journal of Operations Management*, Vol. 25, No. 2, pp. 573-580.

Ketchen, D., Rebarick, W., Hult, G and Meyer, D. (2008), “Best value supply chains: A key competitive weapon for the 21st century”, *Business Horizons*, Vol. 51, No. 3, pp. 235-243.

Khoja, F., Adams, J. and Kauffman, R. (2011), “The inside story of relationship development: power asymmetry in a buyer-supplier relationship”. *International Journal of Integrated Supply Management*, Vol. 6, No. 1, pp. 73-91.

Kianto, A. (2007), “What do we really mean by the dynamic dimension of intellectual capital?”, *International Journal of Learning and Intellectual Capital*, Vol. 4, No. 4, pp. 342-356.

Krušinskas, R. and Bruneckienė, J. (2015), “Measurement of intellectual capital of Lithuanian cities by a composite index”, *Journal of Business Economics and Management*, Vol. 16, No. 3, pp. 529-541.

Kujansivu, P. (2008), “Operationalising intellectual capital management: choosing a suitable approach”, *Measuring Business Excellence*, Vol. 12, No. 2, pp. 25-37.

Labra, R. and Sánchez, M. P. (2013), “National intellectual capital assessment models: a literature review”, *Journal of Intellectual Capital*, Vol. 14, No. 4, pp. 582-607.

Lee, E. S. and Song, D. W. (2010), “Knowledge management for maritime logistics value: discussing conceptual issues”, *Maritime. Policy & Management.*, Vol. 37, No. 6, pp. 563-583.

Lee, P. D. (2006), “Port supply chains as social networks”, in *International Conference on Service Operations and Logistics and Informatics 2006 (SOLI'06)*, pp. 1064-1069, IEEE.

Lemyre, L., Pinsent, C., Johnson, C. and Boutette, P. (2010), “Literature Review on Best Practices in Meta-organizational Governance”, *Defence R&D Canada – Centre for Security Science Contractor Report*, 12.

Lin, C. and Edvinsson, L. (2011), *National Intellectual Capital – A comparison of 40 countries*, Springer; 1st Edition.

Liu, C.C. (2007), “Developing measures of value creation at private universities”, *International Journal of Management in Education*, Vol. 1, No. 1, pp. 86-99.

Lu, W. M., Wang, W. K., and Kweh, Q. L. (2014), “Intellectual capital and performance in the Chinese life insurance industry”, *Omega*, Vol. 42, No 1, pp. 65-74.

Lukes, S. (1974), *Power: a radical view*, Macmillan: London.

Maditinos, D., Sevic, Z. and Tsairidis, C. (2010), “Intellectual capital and business performance: an empirical study for the greek listed companies”, *European Research Studies*, Vol. 13, No. 3, pp. 145-167.

Marlow, P. and Casaca, A. (2003), "Measuring Lean Ports Performance", *International Journal of Transport Management*, Vol. 1, No. 4, pp. 189-202.

Marques, L., Ribeiro, J. and Scapens, R. (2011), "The use of management control mechanisms by public organizations with a network coordination role: A case study in the port industry", *Management Accounting Research*, Vol. 22, No. 4, pp. 269-291.

Marr, B (2005), "The Evolution and Convergence of Intellectual Capital as a Theme", in Marr, B. (Ed.), *Perspectives on intellectual capital*, Routledge, pp. 213-226.

Marti, J. M. V. (2004), "Social capital benchmarking system: profiting from social capital when building network organizations", *Journal of Intellectual Capital*, Vol. 5, No. 3, pp. 426-442.

McNamara, M. (2012), "Starting to Untangle the Web of Cooperation, Coordination, and Collaboration: A Framework for Public Managers", *International Journal of Public Administration*, Vol. 35, No. 6, pp. 389-401.

Miles, M. B., Huberman, A. M., & Saldaña, J. (2013), *Qualitative data analysis: A methods sourcebook*, Sage Publications.

Mills, A. J., Durepos, G. and Wiebe, E. (Eds.) (2010), *Encyclopedia of case study research*, Vol. 1, Sage Publications.

Muntean, M. (2009), "Knowledge Management Approaches in Portal-Based Collaborative Enterprises", *Informatica economica*, Vol. 13, No. 4, pp. 32-38.

Nahapiet, J. and Ghoshal, S. (1998), "Social capital, intellectual capital, and the organizational advantage", *Academy of management review*, Vol. 23, No. 2, pp. 242-266.

Nazari, J. and Herremans, I. (2007), "Extended VAIC model: Measuring intellectual capital components", *Journal of Intellectual Capital*, Vol. 8, No. 4, pp. 595-609.

Nielsen, C. and Dane-Nielsen, H. (2010), "The emergent properties of intellectual capital: a conceptual offering", *Journal of Human Resource Costing & Accounting*, Vol. 14, No. 1, pp. 6-27.

Nieves, J. and Osorio, J. (2013), "The role of social networks in knowledge creation", *Knowledge Management Research & Practice*, Vol. 11, No.1, pp. 62-77.

Nooteboom, B. (2004), *Inter-firm collaboration, learning and networks: an integrated approach*, Routledge.

Notteboom, T. and Winkelmann, W. (2001), "Structural changes in logistics: how will port authorities face the challenge?", *Maritime Policy & Management*, Vol. 28, No. 1, pp. 71-89.

Notteboom, T. and Winkelmann, W. (2002), "Stakeholder Relations Management in ports: dealing with the interplay of forces among stakeholders in a changing competitive environment", in *Proceedings of the International Association of Maritime Economists (IAME) Panama 2002 Conference*.

Olivier, D. and Slack, B. (2006), "Rethinking the port", *Environment & Planning A*, Vol. 38, No. 8, pp. 1409-1427.

Palacios, T. M. B. and Galván, R. S. (2006), "Intellectual capital within Iberian municipalities (network)", *Journal of Knowledge Management*, Vol. 10, No. 5, pp. 55-64.

Pechlaner, H. and Bachinger, M. (2010), "Knowledge networks of innovative businesses: an explorative study in the region of Ingolstadt", *The Service Industries Journal*, Vol. 30, No. 10, pp. 1737-1756.

Peng, T., Pike, S. and Roos, G. (2007), "Intellectual capital and performance indicators: Taiwanese healthcare sector", *Journal of Intellectual Capital*, Vol. 8, No. 3, pp. 538-556.

Polenske, K. (2004), "Competition, Collaboration and Cooperation: An Uneasy Triangle in Networks of Firms and Regions", *Regional Studies*, Vol. 38, No. 9, pp. 1029-1043.

Pöyhönen, A. and Smedlund, A. (2004), "Assessing intellectual capital creation in regional clusters", *Journal of Intellectual Capital*, Vol. 5, No. 3, pp. 351-365.

Provan, K., Fish, A. and Sydow, J. (2007), "Interorganizational Networks at the Network Level: A Review of the Empirical Literature on Whole Networks", *Journal of Management*, Vol. 33, No. 3, pp. 479-516.

Provan, K. and Kenis, P. (2008), "Modes of Network Governance: Structure, Management, and Effectiveness", *Journal of Public Administration Research and Theory*, Vol. 18, No. 2, pp. 229-252.

Ramírez, Y., Lorduy, C. and Rojas, J. (2007), "Intellectual capital management in Spanish universities", *Journal of Intellectual Capital*, Vol. 8, No. 4, pp. 732-748.

Rao, B. P. (1996). "Collaboration in meta-organizations: Research issues and challenges", in *Proceedings of the International Conference on Engineering and Technology Management (IEMC 96)*, pp. 505-509, IEEE.

Robinson, R. (2002), "Ports as elements in value-driven chain systems: the new paradigm", *Maritime Policy & Management*, Vol. 29, No. 3, pp. 241-255.

Rodríguez, C., Langley, A., Béland, F. and Denis, J. L. (2007), "Governance, power, and mandated collaboration in an interorganizational network", *Administration & Society*, Vol. 39, No. 2, pp. 150-193.

Roh, H. S., Lalwani, C. and Naim, M. (2007), "Modelling a port logistics process using the structured analysis and design technique", *International Journal of Logistics Research and Applications*, Vol. 10, No. 3, pp. 283-302.

Roos, G., Pike, S. and Fernstrom, L. (2005), *Managing intellectual capital in practice*, Routledge.

Roslender, R. and Fincham, R. (2001), "Thinking critically about intellectual capital accounting", *Accounting, Auditing & Accountability Journal*, Vol. 14, No. 4, pp. 383-398.

Schiuma, G., and Lerro, A. (2008), "Knowledge-based capital in building regional innovation capacity", *Journal of Knowledge Management*, Vol. 12, No. 5, pp. 121-136.

Schiuma, G., Lerro, A. and Carlucci, D. (2008), "The Knoware Tree and the Regional Intellectual Capital Index - An Assessment Within Italy", *Journal of Intellectual Capital*. Vol. 9, No. 2, pp. 283-300.

Seleim, A. and Bontis, N. (2013), "National intellectual capital and economic performance: empirical evidence from developing countries". *Knowledge and Process Management*, Vol. 20, No. 3, pp. 131-140.

Seleim, A. and Khalil, O. (2011), "Understanding the knowledge management-intellectual capital relationship: a two-way analysis", *Journal of Intellectual Capital*, Vol. 12, No. 4, pp. 586-614.

Sheth, J. N. and Parvatiyar, A. (1992), "Towards a theory of business alliance formation", *Scandinavian International Business Review*, Vol. 1, No. 3, pp. 71-87.

Smedlund, A. (2006), "The roles of intermediaries in a regional knowledge system", *Journal of Intellectual Capital*, Vol. 7, No. 2, pp. 204-220.

Smedlund, A. and Toivonen, M. (2007), "The role of KIBS in the IC development of regional clusters", *Journal of Intellectual Capital*, Vol. 8, No. 1, pp. 159-170.

Solitander, M. (2011), *When sharing becomes a liability: An intellectual capital approach to describing the dichotomy of knowledge protection versus sharing in intra-and interorganizational relationships*, Ph.D Thesis, Hanken School of Economics, Department of Management and Organisation.

Song, D. W. and Lee, E. S. (2012), "Coopetitive networks, knowledge acquisition and maritime logistics value", *International Journal of Logistics Research and Applications: A Leading Journal of Supply Chain Management*, Vol. 15, No. 1, pp. 15-35.

Sporleder, T. L. and Peterson, H. C. (2003), "Intellectual capital, learning, and knowledge management in agrifood supply chains", *Journal on Chain and Network Science*, Vol. 3, No. 2, pp. 75-80.

Stam, C. (2009), "Intellectual liabilities: lessons from the decline and fall of the Roman Empire", *VINE: The journal of information and knowledge management systems*, Vol. 39, No. 1, pp. 92-104.

Stewart, T.A. (1997), *Intellectual Capital: The New Wealth Of Organizations*, Doubleday/Currency: New York.

Sveiby, K. E. and Simons, R. (2002), “Collaborative climate and effectiveness of knowledge work – an empirical study”, *Journal of Knowledge Management*, Vol. 6, No. 5, pp. 420-433.

Swart, J. (2006), “Intellectual capital: disentangling an enigmatic concept”, *Journal of Intellectual Capital*, Vol. 7, No. 2, pp. 136-159.

Tan, H., Plowman, D. and Hancock, P. (2008), “The Evolving Research on Intellectual Capital”, *Journal of Intellectual Capital*, Vol. 9, No. 4, pp.1469-1930.

Tayles, M., Pike, R. H. and Sofian, S. (2007), “Intellectual capital, management accounting practices and corporate performance: perceptions of managers”, *Accounting, Auditing & Accountability Journal*, Vol. 20, No. 4, pp. 522-548.

van der Horst, M. R. and van der Lugt, L. M. (2011), “Coordination mechanisms in improving hinterland accessibility: empirical analysis in the port of Rotterdam”, *Maritime Policy & Management*, Vol. 38, No. 4, pp. 415-435.

Verhoeven, P. (2009), “European ports policy: meeting contemporary governance challenges”, *Maritime Policy & Management*, Vol. 36, No. 1, pp. 79-101.

Verhoeven, P. (2010), “A review of port authority functions: towards a renaissance?”, *Maritime Policy & Management*, Vol. 37, No. 3, pp. 247-270.

Visser, E. (2009), “The Complementary Dynamic Effects of Clusters and Networks”, *Industry & Innovation*, Vol. 16, No. 2, pp. 167-195.

Vlaar, P. W., Van den Bosch, F. A. and Volberda, H. W. (2007), "On the evolution of trust, distrust, and formal coordination and control in interorganizational relationships toward an integrative framework", *Group & Organization Management*, Vol. 32, No. 4, pp. 407-428.

Walter, J., Lechner, C. and Kellermanns, F. W. (2007), "Knowledge transfer between and within alliance partners: Private versus collective benefits of social capital", *Journal of Business Research*, Vol. 60, No. 7, pp. 698-710.

Winkler, I. (2006), "Network governance between individual and collective goals: Qualitative evidence from six networks", *Journal of Leadership & Organizational Studies*, Vol. 12, No. 3, pp. 119-134.

Wu, Y. C. J. and Chou, Y. H. (2007), "A new look at logistics business performance: intellectual capital perspective", *The International Journal of Logistics Management*, Vol. 18, No. 1, pp. 41-63.

Yin, R. K. (2009), *Case study research: Design and methods*, Sage publications.

Yin, R. K. (2011), *Qualitative research from start to finish*, Guilford Press, New York.

Zabala, I., Panadero, G., Gallardo, L. M., Amate, C. M., Sánchez-Galindo, M., Tena, I. and Villalba, I. (2005), "Corporate reputation in professional services firms: 'Reputation management based on intellectual capital management'", *Corporate Reputation Review*, Vol. 8, No. 1, pp. 59-71.

Ziggers, G. W., Gagalyuk, T. and Hanf, J. (2010), "Network Governance at the Firm and Network Level: Goals, Routines, and Social Mechanisms", *International Journal on Food System Dynamics*, Vol. 1, No. 4, pp. 342-351.